JUL 16 1927

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 54, No. 4.
WHOLE No. 901.

RICHMOND, VA., JULY, 1927

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

Speaking of Nasal Sinus Operations. J. W. Jervey, M. D., Greenville, S. C. ---- 203

Coalition as an Indispensable Factor in the Diagnosis of Pyorrhea Alveolaris. John Bell Williams, Ph.G., D. D. S., Richmond, Va. ---- 206

Infectious Jaundice. Wyndham B. Blanton, M. D., Richmond, Va. ---- 210

On Hemorrhage as a Complication of Tonsillectomy. Walter A. Wells, A. M., M. D., F. A. C. S., Washington, D. C. ---- 214

Surgical Treatment of Gastric and Duodenal Ulcer. Stephen H. Watts, M. D., F. A. C. S., University, Va. ---- 220

Some Considerations Pertaining to Nasal Pathology. William C. Moomaw, M. D., Petersburg, Va. ---- 222

Circulatory Adaptation to Muscular Exertion. C. C. Haskell, M. D., Richmond, Va. ---- 226

The Problem of Ectopic Pregnancy. George H. Reese, M. D., Petersburg, Va. ---- 229

Foreign Bodies in the Air and Food Passages—Case Reports. E. G. Gill, M. D., Roanoke, Va. ---- 232

Pneumococcic Peritonitis—Report of Two Cases. Herbert C. Jones, M. D., Petersburg, Va. ---- 233

Agranulocytic Angina—With Report of a Case. O. O. Ashworth, M. D., and E. C. Maphis, M. D., Richmond, Va. ---- 237

The Role of the Surgical Pathologist. Regena Beck, A. M., M. D., Richmond, Va. ---- 239

Acute Mastoiditis. Samuel M. Cottrell, M. D., Richmond, Va. ---- 243

Perforated Gastric and Duodenal Ulcers—A Study of Twenty-Seven Cases. Harry M. Hayter, M. D., Roanoke, Va. ---- 247

Typhoid Thyroiditis—A Case Report. I. A. Bigger, M. D., and W. E. Scribner, M. D., University of Virginia ---- 249

Arsenical Dermatitis Following the Use of Neoarsphenamine and Similar Products by Different Manufacturers. Edgar W. Young, M. D., Petersburg, Va. ---- 249

On Retirement. I. S. Stone, M. D., Washington, D. C. ---- 250

A Rapid Quantitative Estimation of Sugar in Urines. Theodore J. F. Mitschke, Danville, Va. ---- 251

CORRESPONDENCE ---- 252

BIBLIOTHECA OBSTETRICA ---- 253

ANALYSES, SELECTIONS, ETC. ---- 253

WOMAN'S AUXILIARY, MEDICAL SOCIETY OF VIRGINIA ---- 254

THE TRUTH ABOUT MEDICINE ---- 255

BOOK ANNOUNCEMENTS ---- 258

EDITORIAL ---- 259

NEWS NOTES ---- 261

OBITUARY ---- 270

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

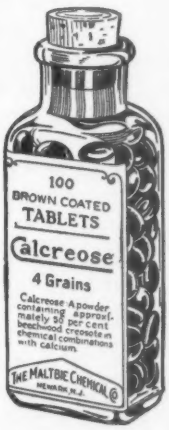
IN

ENTERITIS

"CREOSOTE and guaiacol are used internally as intestinal and urinary antiseptics, as stimulant expectorants in bronchitis and in the treatment of tuberculosis. Their local irritant actions often interfere with their internal administration."—N. N. R., 1925, p. 99.

DURING the summer months intestinal antisepsis is particularly desired in connection with the treatment of various diseases of the intestinal tract.

CALCREOSE, being a loose chemical combination of equal parts of creosote and calcium oxide, is especially useful in this connection because it supplies all the benefits of creosote without the possible disturbances caused by creosote alone.



Calcreose can be given in large doses for long periods without apparent difficulty

Powder: Tablets: Solution

Samples of Tablets on Request

THE MALTBIE CHEMICAL COMPANY

Newark, New Jersey

How high protein feedings with carbohydrate additions can be used to correct fermentative (summer) diarrhoea

Mead's Casec
(Calcium Caseinate)

FERMENTATIVE (summer) diarrhoea in infants is now recognized in the majority of cases as being due to excessive fermentation of carbohydrates. The stools are usually distinguished as being greenish in color, acid in odor, irritating to the skin, and with or without mucous.

The correction of fermentative diarrhoea is accomplished by the control of the bacterial activity in the intestines which produces the disturbance.

A rational way to combat the excess activity of acid-forming bacteria is temporarily to reduce the carbohydrate and increase the amount of protein in the feeding. This may be done by adding Casec to diluted cow's milk. The administration of this mixture usually produces less frequent stools and of a paste-like consistency within one or two days.

After two or three days of such feedings, Mead's Dextri-Maltose is the form of carbohydrate usually added gradually to the feedings to prevent carbohydrate starvation. Mead's Dextri-Maltose is the carbohydrate most easily assimilated, having greater limits of tolerance in infants recovering from fermentative diarrhoea.

MEAD'S
INFANT DIET MATERIALS EXCLUSIVELY

Mead's
Dextri-Maltose

Samples and Literature on Request

MEAD JOHNSON & CO.
Evansville, Indiana

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 54, No. 4.
WHOLE No. 901.

RICHMOND, VA., JULY, 1927

20 CENTS A COPY
$2.00 A YEAR

SPEAKING OF NASAL SINUS OPERATIONS.*

By J. W. JERVEY, M. D., Greenville, S. C.

"Speaking of Nasal Sinus Operations" may sound rather Irvin Cobbish, but I can re-assure you that I am not going to give you my personal experiences as a patient. So far I have not been a victim of any of my rhinological brethren. I shall attempt to recount to you, in a general way, my observations covering these conditions as they have presented themselves to me in nearly thirty years' practice in a climate not very dissimilar from your own.

First of all, you note, of course, that I refer to "climate" in this connection. Why shouldn't I? Those of us who are engaged in this work in the more rigorous northern and western climates evidently see many more, and much more violent, cases of this sort than those with which we in the "Sunny South" come into contact. The same is true in mastoid infection—and, after all, this mastoid is virtually but another, though somewhat segregated, nasal accessory sinus.

To begin at the beginning (which is the proper place to begin even in such as discursive discussion as this promises to be): Why is sinus disease? And we shall, by mutual consent, throw out of consideration the so-called "catarrhal sinus", and confine ourselves to actual sinus infection.

In October, 1925, the American College of Surgeons held its annual meeting in Philadelphia. I was invited to open the discussion of Joseph C. Beck's paper on nasal sinus infections (I have forgotten the exact title of the paper). In the course of his remarks he stated that tonsil infections almost invariably followed sinus infections. In my discussion I mildly suggested that he may inadvertently have put the cart before the horse, for it has been my observation that in little less than one hundred per cent of the sinus cases I have seen in thirty years' practice there was either present, or *had been present*, a pre-existing tonsillar infection. (This is, of course, exclusive of those antrum cases of frankly dental origin, and those which seem definitely to be sequelae of influenza—though most of these latter will be found to have existent or pre-existent tonsil infection).

Furthermore, my experience has taught me that it is rather likely to lead to a foolish feeling, if one tries to eradicate a sinus infection and leaves infected tonsils "as is". Think that over! Every time the unfortunate proprietor of infected tonsils coughs, or sneezes, or blows his nose, a hurricane of pus-saturated air breezes through his post-nasal and nasal channels. Why wouldn't the sinus outlets gather in their share of it? And, remembering your anatomy, which of the nasal sinuses are most likely to bear the brunt of this polluted air attack?

Most of this vicious current is gathered in by the overhanging posterior end of the middle turbinate and is swept directly across the hiatus semilunaris where are the mouths of the frontal, ethmoid and maxillary sinus orifices. The sphenoid orifice is on the posterior wall of the nasal chamber. The effect of the blast is rather to create a sphenoid vacuum and cleanse this sinus, without direct contact of the impregnated stream with the sphenoid orifice. But the others suffer from the contact in varying degree. The frontal has a long downward drainage trend, and is not often implicated. The ethmoid has a downward and forward drainage trend, but it is a much shorter route; while the maxillary antrum has its yawping, dangerously placed, orifice ready to take in any stranger that comes its way. These are anatomical facts. What are our pathological observations?

The antrum is by far the most frequently infected sinus. I believe we are all agreed on that point. Next, certainly in my observation, comes the ethmoid labyrinth. Then comes the frontal, and, finally, and seldom seen in our climate, the sphenoid. Exactly the order we might expect in consideration of the mechanical formation and forcible expulsion of infection from behind—that is, from the pharynx up to the posterior choana and forward.

I do not for a moment deny the influence of

*Read by invitation at the eighth annual meeting of the Virginia Society of Oto-Laryngology and Ophthalmology, in Charlottesville, Va., April 30, 1927.

the influenza infection in the causation of sinusitis, but even in these cases the mechanics of the situation are largely the same, and tonsil infections are almost invariably present. Nor do I deny the occasional (though, I believe, not as frequently as supposed) infection of the maxillary antrum from a diseased tooth root. And I am glad to pay tribute to my dentist friends who frequently send antrum cases to me, not because they are caused by infected teeth, but because the patients think they have dental trouble, and the dentist, finding no pathology within his own domain, recognizes the likelihood of antrum infection. I have one dentist friend who is particularly clever at this diagnosis.

Having thus briefly disposed of the relative frequency of incidence of sinus infection, allow me to try, equally as briefly, to dispose of their management by operative procedure—the *raison d'etre* of this discussion.

Let me say, in passing, that certainly, at least in acute infections, conservative measures, such as shrinking of intranasal mucosa to provide for drainage, vacuum drainage and douching, and local medication, as well as general dehydration and drying up of secretions, should first be resorted to. Nor are certain dietary regulations and the particular importance of blood calcium content to be ignored; and these latter are of vital importance also in the chronic and operative cases.

Beginning, then, with the most frequent group of sinus infections requiring some form of operative interference, viz.: the maxillary antrum infections, I shall outline to you my method of attack by means which have given me the most satisfactory results. First, I puncture and irrigate through the naso-antral wall, below the inferior turbinate. The most scrupulous aseptic precautions are observed, because, even though you know you already have a present infection, there can be no excuse for adding fuel to the fire. The irrigation is done with saline solution, and when the cavity is washed clean, the syringe is again used to blow the residual solution out and the cavity is filled with 1-1,000 neutral acriflavine solution. I am aware that some accidents have been reported from the injection of air into the antrum, but I consider the procedure entirely safe, if proper care has been used in the original puncture.

I am also aware of the fact that our laboratory friends tell us that we must determine first whether we have an infection from an acid-fast or Gram-positive or Gram-negative micro-organism, or some other variety, and be thereby guided in our choice of antiseptic. There may be something in this; I am willing to concede the point; but I have been so often misled by these friends that I make many mental reservations in accepting their dicta, and often prefer to let my conscience and my clinical sense be my guide.

When this means fails in a reasonable time to bring about improvement, I resect the naso-antral wall below and external to the inferior turbinate, making a large and permanent opening for drainage and ventilation. This can and should be done without sacrifice of any part of the inferior turbinate, and is invariably a successful procedure, except where there is polypoid degeneration (and sometimes even then) or other neoplastic growth. And this thought leads me to asseverate what you all doubtless already know, but bears emphasis, and that is that the presence of mucous polyps does not always mean that these growths have to be surgically dealt with. Free drainage and ventilation have made many a well-formed and robust polyp "iris out", as they say in moving picture parlance.

Where we encounter persistent neoplastic development in the antrum, then the Caldwell-Luc or the Denker operation is indicated. I prefer the latter. I may say also that, when I do it, I prefer to suture the buccal incision. Thus, briefly, we dispose of the infected antrum, the commonest of the nasal accessory sinus infections.

Next, let us consider infection of the ethmoid labyrinth. It is difficult, and I believe unneccessary, to draw a dividing line between anterior and posterior ethmoid. Knowing that we have disease in this area, my first idea is to try to drain it through its natural exits by means of vacuum douches. If I have reason to think the infection is limited to the anterior cells, and conservative measures are unsuccessful, then I open these cells under the middle turbinate without disturbing the latter. If the posterior cells are involved, I do not hesitate to sacrifice the whole of the middle turbinate by resection before entering the labyrinth. My method of opening these cells is from before backward, and every step strictly under the direct scrutiny of my eye. Nobody should enter my ethmoid by any other procedure, and I shall not enter the other fel-

low's save under the same safeguards. I have seen it done otherwise, by the sense of touch, and the assumed sense of a more or less divine intuition or orientation—but not for me. I may say that I approach the complete ethmoid exenteration with greater fear and respect than any other sinus operation (including the mastoid).

Next, and in the order of frequency, we come to the frontal sinus. When I know I have an infection of this cavity, I resort, as in the case of the ethmoid, first to vacuum douching. If this does not turn the trick, I resect the anterior third of the middle turbinate which is almost invariably hypertrophied or cystic, in the hope that this will relieve the drainage block. This failing, I break down the anterior ethmoid cells, which procedure, in almost all cases, gives direct entrance into the frontal. The passage may be enlarged with rasps if necessary. Then irrigation and medication follows, similar to that already described in the case of the maxillary antrum.

Just as in the case of the antrum, however, we may happen to be confronted with a cyst or a polyp or other neoplastic formation. In addition, we may have here, what is rare in the antrum, one or more dividing septa, perhaps with small communicating openings between divisions of the sinus. In these cases, of course, the radical operation must be undertaken. Yet I have very, very seldom found it to be necessary. When it must be done, I rather incline to the Lothrop operation, which, of course, is well known to you.

As to the sphenoid sinus, I must say that its involvement has been, in my experience, extremely rare. Occasionally I drag a polyp out of its depths, perhaps originated by infection in an adjacent posterior ethmoid cell. Yet I never fail to investigate the sphenoid when doing a radical ethmoid exenteration. In nearly every such case I resect the anterior sphenoidal wall (carefully avoiding the lower external angle, where a branch of the ascending palatine artery is likely to provide lively hemorrhagic possibilities, if sectioned), and assure myself of the physiological integrity of the cavity. So important do I deem this, in view of the many reported cases of optic nerve involvement from this source, that, if I cannot locate the sphenoid orifice, I make an operative opening into the anterior wall with a Grayson sphenoid burr (a very simple procedure), and enlarge this for inspection of the cavity.

May I add that sinus infections in infants and young children are almost invariably amenable to conservative treatment by means of proper irrigating and douching. It is the exception when operation is required.

You will observe that I have had nothing to say about the diagnosis or symptoms of accessory sinus disease. These do not fall within the purview of the title of this paper. But I cannot leave the subject without reference to one point in semeiology and one in diagnosis. The first is that frontal pain and tenderness do not, even in half the cases, point to frontal sinus involvement. A great many cases of antrum infection, and nearly all ethmoid infections, will produce frontal pain and tenderness of the frontal floor.

The other, the diagnostic point, has to do with the roentgenology of the situation. In the first place, every rhinologist should learn to read the radiographs of his sinus cases, even though he has not his own X-ray laboratory. No roentgenologist is capable of making a sinus diagnosis without careful consideration of clinical consultation; and the rhinologist should be ashamed to expect him to do it, and is derelict in his duty if he allows him to do it.

I cannot enter here into a discussion of the preferred positions for radiographs in these cases—for we have varying predilections; nor can I discuss the frequently contrasting findings of roentgenology and transillumination, and their differentiation as between the presence of pus and polyps, previous sinus disease and thickened mucosa, varying density of bony formation, and so on. But I do say that the greatest value of roentgenology in these cases lies not in its inherent diagnostic aid (in which sphere it is distinctly secondary to clinical observation), but in its corroborative value to a diagnosis already made or clinically suspected, and to a greater and more important degree in its definition of the area and distribution and relative position of the various sinuses and their connections, forming an important guide and check on whatever operative interference may be undertaken.

Finally, without, I assure you, the least intent to magnify any successes or minimize any failures that I may have encountered in the management of these cases, I can truly say that belief and confidence in the principles

just outlined have resulted in making it difficult to find, in a search of my records, a single case of sinus disease that was not adequately taken care of, and, so far as I know, cured. Always remember, if you please, that I am speaking as one who practices only in the "Sunny South". but who knows from contact and observation and contemporary reading that the farther north we go, and the more rigorous the climatic conditions that exist, the greater and more difficult and serious are the problems encountered in the management of nasal accessory sinus infections.

COALITION AS AN INDISPENSABLE FACTOR IN THE DIAGNOSIS OF PYORRHEA ALVEOLARIS.*

By JOHN BELL WILLIAMS, PH.G., D. D. S., Richmond, Va.
McGuire Clinic.

"Mighty things from small
beginnings grow."—*Dryden.*

Pyorrhea alveolaris is a disease which has been destroying the teeth and their surrounding tissue since the dawn of civilization. Existing evidence indicates that beyond a doubt this insidious disease cast its shadow on the lives of the early Chinese, Egyptians, Phoenicians, Greeks and Romans; for in ancient literature their frequent allusions to "loose teeth" and "bleeding gums filled with corruption" can easily be interpreted today as describing pyorrhea.

Nomenclature

The term "pyorrhea" was originated by a French dentist, Monsieur le Docteur le Dentiste Joirac, in 1822, and was generally considered incurable in that unenlightened day of dentistry.

Men attempted to treat the disease with mouth washes to induce "breath like a May morn." Even today we find survivals of the mouth-wash treatment which is so ineffective that it almost amounts to a superstition and is quite in keeping with the French custom of using perfume instead of bath tubs. Our laity are importuned by advertisements to use mouth washes for halitosis, while the American dentists attempt to teach that it is better to eliminate the debris than constantly to deodorize it.

John M. Riggs, of Hartford, Conn., in 1845 was the first to proclaim pyorrhea a curable disease. In his revolutionary paper he asserted that with proper surgical treatment 90 per cent of all cases could be cured. He acquired an enviable reputation in America and abroad, and as a result of his work pyorrhea came to be known as "Riggs' disease." In recent years the American Academy of Periodontology has

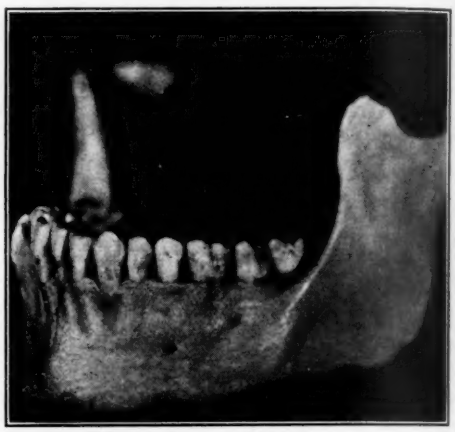


Fig. 1.—Normal relation of bone and teeth.

adopted the title of "periodontoclasia" or "dental periclasia," as proposed by A. J. McDonough, of Toronto, meaning a breaking down of the tissues surrounding the teeth. Between the introduction of these titles no less than fifty-seven appellations have been offered to designate these persisting pockets of pus. In endeavoring to keep "up-to-date" with the numerous titles, we have frequently been forced to call into use the retort of David Crockett, who when he was criticized by a fellow member of Congress for his poor spelling, replied that a man must be a mighty poor speller if he could not spell a word more than one way. Whether this dread disease is called pyorrhea, periclasia or any of the other numerous "-itides" or "-asiae", is not so important as the realization of its fiendishness as a focalized infection.

Pathology

Pyorrhea alveolaris begins as a rule at the gingival border, progressing slowly toward the apices of the roots of the teeth. A complete destruction of the alveolar process and pericementum with exfoliation of the teeth is inevitable unless the disease is arrested by treatment. Some of the characteristics attending its progress are inflammation of gingiva, usually spoken of as soft, swollen, bleeding gums, destruction of the floor of the gingival

*Read before the Southside Virginia Medical Association at Hopewell, Va., March 8, 1927.

crevice, absorption of the alveolar process and the formation of suppurative pockets. Other characteristics are sensitiveness of thermal changes, separation, elongation and loosening of teeth. The first phenomenon to manifest itself in this disease is gingival inflammation which may come from various causes, of which

Fig. 2.—Normal appearance of soft tissues about central incisor, cuspid and bicuspid, with recession of the marginal gingival line about the lateral incisor.

uncleanliness of the mouth is paramount. Irritation of the gingiva from any cause of long standing will result in inflammation which may be carried through the gingival group of pericemental fibres to the pericementum and cause a break in the floor of the gingival crevice. Following upon this break the cementum, the pericementum and alveolar process are thrown open to ruinous irritation and infection. The destruction of the alveolar process and pericementum is followed by shrinkage of the gums and bone resorption resulting in the formation of pockets where the bacterial flora of the mouth find their way. The bacteria of the mouth are not believed to have any direct primary relationship to pyorrhea; they are considered secondary trespassers only.

Relation to Systemic Disease

It is certain that the day when dentistry was judged in terms of gold shell crowns and false teeth has been relegated to the past and rests in the archives of that era in medicine when calomel was king and blood-letting the anchor of hope. For her renaissance dentistry owes much to the study of systemic disease, for what Shakespeare did for the theatre, what Patrick Henry did for the Revolution, what ether did for surgery, focal infection has done for dentistry.

It would be as presumptuous for a dentist unassisted by a physician to attempt to diag-

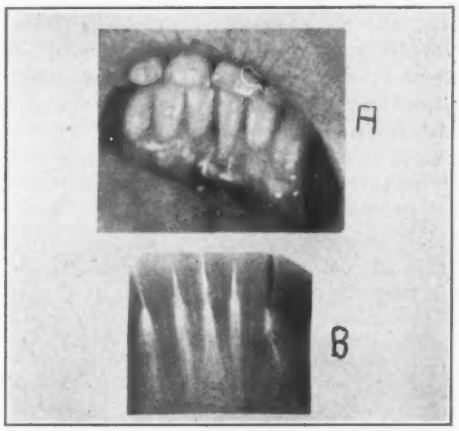


Fig. 3.—(a) Destruction of soft tissue about an incisor tooth. (b) Radiograph of same tooth fails to show presence of the disease, because the bone destroyed by the lesion is over-shadowed by the tooth.

nose such systemic diseases as those of the heart and pericardium, serous membranes, joints, gastro-intestinal tract, eye, genito-urinary tract, etc., in relation to any form of oral sepsis as it would be impossible for a physician to diagnose and treat decayed teeth. The dentist struggling alone is about as far from even a working knowledge of these systemic

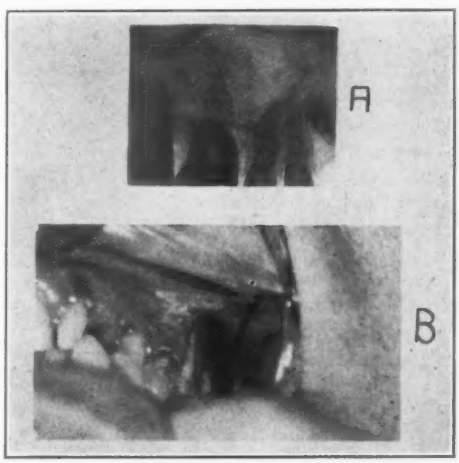


Fig. 4.—(a) Radiograph of bicuspid and molar teeth fails to show any distruction of bone. (b) Photograph of same teeth showing the absence of the buccal plate of bone about the first molar.

diseases as Benjamin Franklin was from the radio. The dental examination is merely one of the elements from which the finished diagnosis is synthesized. The master chemist in this building process must be the doctor of general medicine or surgery. He is not the dentist, the roentgenologist, nor is he the otolaryngologist or any worker in a special field. With the doctor of general medicine or surgery lies the responsibility of sifting the essentials from the non-essentials and of reducing the mass of special work to manageable form. The importance of pyorrhea in this melting pot is summed up by James H. Smith* as follows:

"The subject of pyorrhea is one which I think may not receive the attention it deserves at the hands of internists, though I may be unjustly ascribing my own tendencies to others. We think of it as esthetically objectionable, and as a liability for the entrance of bacteria into the digestive tract, believing, however, that under normal conditions they will be taken care of. But as sources of toxic absorption by way of lymphatics, we are inclined, I think, to regard pyorrhea lightly, counting on its superficial localization and unimpeded drainage to avoid the role of foci of infection. I am inclined to believe we may now underestimate its constitutional effects even as once we possibly overestimated them."

Fig. 5.—A beginning of bone destruction about several teeth with advanced destruction about the lower incisors. Note area of apical change about the upper left second bicuspid and second molar.

Diagnosis

Today three methods are employed in the diagnosis of pyorrhea alveolaris:

(1) A clinical examination without an X-ray examination.

(2) An X-ray examination without a clinical examination.

(3) A combination of these two procedures.

Box* has enumerated twenty "signs" of early periodontal disease:

(1) Traumatic crescent.

(2) Congestion of marginal gingiva.

(3) Mobility No. 1.

(4) Recession of the marginal gingival line.

(5) Asymmetric recession of the marginal gingival line.

(6) Recession of the alveolar crest line.

(7) Increased radiolucency of the alveolar crest of lamina dura.

(8) Disturbance of normal contour of the alveolar crest.

(9) Increased widening of the pericemental space.

(10) Mobility No. 2.

(11) Shortening of the crest of the septal gingiva.

(12) Linear depressions in the alveolar mucosa.

(13) Stillman's clefts.

(14) Absence of stippling.

(15) Festoons.

(16) Injection of blood vessels.

(17) Increased depth of the gingival crevice.

(18) Epithelial nodules.

(19) Distended veins in the mucosa.

(20) Pus cells in the crevicular exudate.

*Smith, James H., M. D.: The Dental Problems of Internal Medicine. **Dental Cosmos**, October, 1926.

*Studies in Periodontal Pathology, Harold Keith Box, D. D. S., Ph.D., F. A. A. P., **Canadian Dental Research Foundation**, Toronto.

Four of these signs can be determined only by the use of the X-ray. Eight can be seen only upon clinical or microscopic examination, while with the remaining eight signs pyorrhea will leave its trace so profoundly as to be seen either by the eye or upon an X-ray plate.

It is as certain that the presence of pyorrhea as shown on a radiograph cannot always be determined by a clinical examination as it is manifest that pyorrhea may be present but show no evidence of its manifestations upon a radiograph. The reason for this is because the character of the tissues is such that the changes in the hard tissues, that is the cementum and bone, cannot be seen upon clinical examination, while changes in the soft tissues, that is the gingiva and pericementum, cannot be transposed to a radiograph. Another reason the radiograph sometimes fails is because the teeth set between two plates of bone. One of these plates may be destroyed while the opposite plate remains standing to be recorded on the radiograph, shielding the destruction of its fellow.

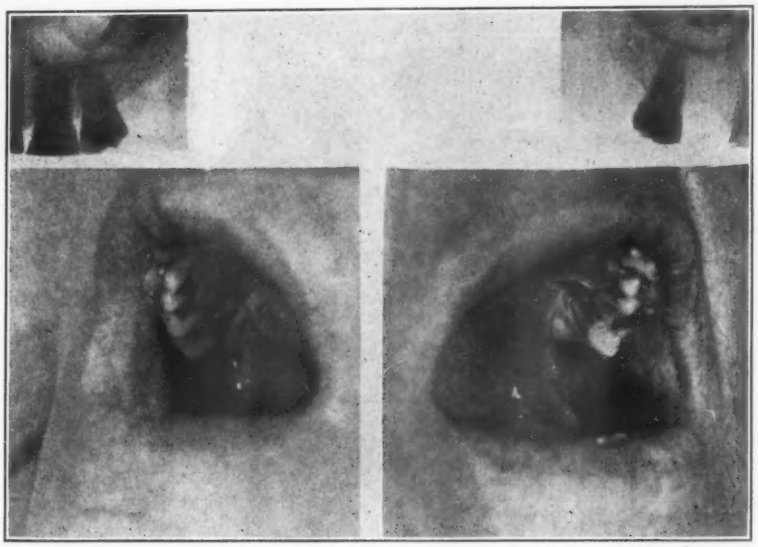


Fig. 6.—Photograph of maxillary molar teeth showing extensive bone destruction about the palatal roots. Radiograph fails to show this destruction of bone.

Treatment

Treatment for pyorrhea is divided into three parts. The first part is to scavenge the mouth of all debris, deposits, necrosed tissue, overhanging fillings, improperly fitting crowns and other forms of irritation. Obviously this must be done by a dentist. The second part of the treatment is to balance the occlusion, that is the correction of "traumatic occlusion", or "pernicious percussion", so that the stress of mastication will fall equally upon all the teeth. This is done by grinding the chewing surfaces of the teeth until they "hit" uniformly. The third and most important part of the treatment is preventive as well as curative. In its application the physician has an opportunity for rendering a great service toward postponing the "toothless age." This part of the treatment consists of purging the blood content of the periodontal vessels at least twice daily. It is carried out by the correct use of a good tooth brush. The average drug store tooth brush is improperly shaped, too soft and entirely too large for any human being's mouth. A brush that can be brought into contact with the tissues about all the teeth must be small. To properly massage these tissues it should be hard. A good technique for using the brush has been introduced by Paul R. Stillman,* of New York. It consists in placing the bristle ends of the brush partly on the gingiva and partly on the cervical portion of

*Stillman, Paul R., D. D. S., F. A. C. D.: Physical Culture for the Gingivae. **Dental Cosmos**, October, 1924.

the teeth. Sufficient pressure is applied to effect a perceptible "blanching" of the gingival tissues. As the pressure is released there is a rapid inrush of blood causing a marked "blushing." This act is repeated several times about all the teeth. The result is a cleansing of the teeth and a distinct massage to the soft parts. It supplies the highest degree of cleanliness and health to the teeth and surrounding tissues.

I have presented a great many details relating to the causes, pathology and treatment of pyorrhea at the risk of becoming tedious to a body of physicians, but they are facts essential to a discussion of this subject because the minor details are the small irritants that are "like unto the mustard seed, which is the least of all seeds, but when it is grown it is the greatest among herbs and shooteth out great branches."

Conclusions

(1) The term periodontoclasia appears more appropriate than any other title for describing diseases of the investing tissues of the teeth.

(2) The term pyorrhea is more generally used in describing these conditions.

(3) The manifestations of this disease are to be seen in almost every adult mouth.

(4) Its importance as a focalized infection is generally conceded.

(5) Its successful treatment depends upon early recognition.

(6) Early recognition is dependent upon careful co-operation of clinicians and roentgenologists.

(7) It can often be diagnosed by a clinical examination alone, but its extent can never be determined or proper operative treatment applied without an X-ray examination.

(8) An X-ray examination will frequently show evidence of pyorrhea which cannot be seen upon clinical examination.

(9) An X-ray examination alone will sometimes fail to show an active pyorrheal process.

(10) The safest method of examination is a combined X-ray and clinical examination.

(11) In the prevention as well as in the treatment of pyorrhea, correct brushing of the teeth and gums is the core of the whole subject.

INFECTIOUS JAUNDICE.

By WYNDHAM B. BLANTON, M. D., Richmond, Va.

Infectious jaundice is a disease that has been recognized as a clinical entity since 1849[1]; a disease that has assumed epidemic proportions both in war and in civil life, where individuals have been forced to live among insanitary surroundings. It is likewise a disease that occurs sporadically, and as such is probably encountered more frequently than is generally supposed. Whether we are justified in classifying infectious jaundice into a single, or into several separate categories remains to be seen, and awaits the final demonstration of the infective agent in the case of epidemic icterus, and doubtless also in those cases of so-called catarrhal jaundice. It seems likely from what is already known of this whole class of icteric diseases that the common etiological organism when demonstrated will be a spirillum.

Since Schaudinn demonstrated the *Treponema pallidum* (Syphilis) in 1905, the number of infectious diseases recognized as due to spirochetes has steadily increased. Under this heading are now classed the *Spirillum of Vincent* (Vincent's Angina), *Spirochaeta Obermeier* (Relapsing fever), *Spirochaeta morsus mura* (Rat bite fever), *Spirochaeta pertenuis* (Yaws), *Leptospira icteroides* (Yellow fever) and *Leptospira icterohemorrhagiae* (Weil's disease).

I. Spirochaetosis Icterohemorrhagica (Weil's Disease)

Weil's disease was first recognized by Larrey and Ozanam (1849). It was first described accurately by Weil (1886)[2]. The first demonstration of the causative organism was made by Inada, (1913)[3], and since then it has been successfully cultured on artifical media, using the method by which Noguchi for the first time grew the treponema of syphilis.

This type of infectious jaundice occurs widely throughout the world. It was recognized among the troops on every battle front in the recent war—French, Japanese, Canadian, British, Rumanian and Italian. Epidemics of it have been studied and described in Japan,[4] especially in mines where the adjacent soil is alkaline. Sporadic cases are everywhere met, but in this country very few instances are on record in which the causative organism has been isolated. In January of

this year, Hayman[5] reported the fifth case. Cushing[6] has recently demonstrated it in two cases in Bellevue Hospital, New York City.

The Japanese,[7] who have added most to our knowledge of this disease, describe it as presenting three phases. *First*—Febrile stage, 7 days. There is a sudden onset with chill, fever, injected eyes, herpes, hemorrhages, headache and muscle pains. There is albuminuria, enlargement of the liver and tenderness of the abdomen. Organisms (leptospira) occur in the blood, liver, spleen and adrenals. No immune bodies are demonstrable. *Second*—Icteric stage, 7th to 13th day. Jaundice usually begins on the fourth day. There is a peculiar greenish tint present in the skin. The pulse is slow, itching and other symptoms of jaundice exist. The leptospira now leaves the blood stream, liver and adrenals. It is still present, however, in the kidneys and urine. Immune bodies can now be demonstarted in the blood. This is the period during which death, if it occurs, is to be expected. *Third*—Convalescent stage, 13th to 16th day. Jaundice begins to fade. Anemia and wasting are now important features. Immune bodies reach their height in the blood serum. Organisms are present in the kidneys and urine.

CASE REPORT.

A university student, aged 20, presented himself because of jaundice of three weeks' duration. He had taken part in a swimming meet and almost immediately became suddenly and acutely ill. He entered the University of Virginia Hospital as a suspected case of grippe. Headache, fever, pains in the back, nausea and vomiting were distressing and continued off and on for the first week. He had no appetite and was quite constipated. His temperature is said to have reached 104° F. On the second day of his illness he became jaundiced, his stools were observed to be light and his urine dark. There were no hemorrhages.

Examination three weeks after the onset showed that he was still markedly jaundiced, though he was up and about. His temperature was normal. The stools were light though not clay colored. The urine was dark and showed bile. There were both albumin and casts in the urine. The icteric index was 75. Several duodenal taps got quantities of dark bile. The liver and spleen were not palpable. He continued to be constipated, showed little appetite and lost weight. The blood serum was sent to Dr. Noguchi, of the Rockefeller Institute, who found that it completely destroyed leptospira icterohemorrhagiae, establishing the diagnosis of Weil's disease.

On the twenty-eighth day of his illness he began to complain again of headache, loss of appetite, constipation and general malaise. His temperature rose to 101°-102° F. After one week in bed he became markedly better, the jaundice began to clear and five weeks after the onset he was able to return to his work. Though still jaundiced, the urine was bile free. At the time of his second febrile reaction, urine was injected intraperitoneally into a guinea pig. This pig did not develop jaundice and has remained well.*

Correspondence with Dr. H. B. Mulholland, of the University of Virginia Hospital, who saw this patient when he was first taken ill, disclosed the fact that blood withdrawn at that time was injected into guinea pigs from whom, he reports, the leptospira icterohemorrhagiae was isolated. This was an interesting verification of Pfeiffer's reaction already demonstrated in the blood serum by Dr. Noguchi. Dr. Mulholland plans to report this case and his work upon it during this stage in a separate paper. His findings were made entirely independent of the subsequent history.

II. EPIDEMIC INFECTIOUS JAUNDICE

Jaundice of an epidemic nature occurred in 22,509 soldiers during our Civil War. There were 161 deaths in this number. 5,648 cases were reported as occurring in the South African war. In 1917, in Mesopotamia alone, there were 4,171 cases. Colonel W. H. Willcox[8] has admirably reported this epidemic in his Lettsomian Lectures on jaundice. There have been civilian epidemics of jaundice in the United States since 1812. As Blumer's[9] studies showed, practically every state in the Union has been affected. There were small epidemics in Norfolk in 1812, at Halifax Court House in 1856, and in Richmond in 1860. In 1922 Williams[10] reported an epidemic of 300 cases among school children in New York State. Symmers[11] and Witt[12] both described small outbreaks from Bellevue Hospital.

Willcox from an enormous experience gives the symptoms as follows: a prodromal period of abdominal discomfort, anorexia, nausea, occasional vomiting, diarrhea and constipation. The onset is marked by a mild pyrexia and chilliness. The tongue is furred. There is vomiting, headache and "pains all over". About the fourth day jaundice gradually begins to appear. The liver, spleen and right heart are enlarged. After a mild course—usually three weeks—the patient is convalescent. Severe and fatal cases were occasionally encountered. Yellow atrophy of the liver was noted in a few of the fatal cases. The mortality was far below that of Weil's disease—0.4 per cent as against an average mortality of 30 per cent. No organisms were found after elaborate and thorough laboratory investigation of the Dardanelles' epidemic. Other workers in similar outbreaks have been unsuccessful in establishing the causative organism.

*Inada denied the occurence of relapses. He speaks instead of after-fevers due, he thinks, to disintegrating toxins at the height of immunity. He bases this on the fact that at this time there is no return of the main symptoms and the blood is not infectious.

A small epidemic of infectious jaundice was recently encountered in Richmond school children. Three children, each eight years old, occupying adjacent seats in a school room, simultaneously developed a similar train of sypmtoms, the prominent features of which were anorexia, languor, mild gastric and intestinal complaints, slight temperature, enlargement of the liver, jaundice, clay colored stools and bile in the urine. After one week all of the stools again showed the presence of bile. A study of the urine sediments under the dark field revealed no spirochetes. Guinea pigs were inoculated intraperitoneally with 6 c.c. of fresh urine from each case during the first week. The pigs were bled from the heart after forty-eight hours and the blood serum searched under the dark field. No organisms were found. All of the pigs survived. After ten days the urine was again inoculated into guinea pigs, also with negative results.

Three weeks after the development of these three cases, other cases began to appear. In the home of one of the children a younger brother and sister each developed the disease, the only other brother escaping. Another of the original cases infected her younger brother. The third did not infect any of his three brothers and sisters, who were older than he. At this time three other cases developed, one in the same class room, two others from a different class. In all, eight cases of jaundice appeared, three simultaneously; and three weeks later, five others who were definite contacts. Six of these cases were seen and studied by us. It is to be noted that home contact between school children and children who were not in school was a prominent feature of this outbreak. The disease is evidently carried from person to person, though in this instance the contact was usually an intimate one—those first affected sat side by side in school and the secondary cases were brothers and sisters. The great majority of the other children in the same school room were unaffected. These observations are at variance with the assertion of Willcox that "the epidemic character appeared due to a common cause rather than a spread from person to person". He asserted that instances of infection from patient to patient in the hospital were not common.

CASE REPORTS.

Case 1. An eight year old boy, who had been perfectly well except for tonsillitis a month previously, became listless, constipated and lost his appetite. The next day he complained of pain in the epigastrium and nausea, and vomited moderately. Jaundice of the skin and mucous membranes, clay colored stools and dark bile-containing urine were noticed. Pule 72. Temperature 99.5° F. The liver margin was firm, but not tender, and extended one inch below the costal border. After two days, most of the symptoms subsided, but jaundice, palpable liver and characteristic stools and urine continued for one week. On the seventh day a distinct yellow color began to show in the stool.

Case 2. A previously healthy girl of eight years was given calomel by her mother for constipation. She appeared well for a week. Her mother then kept her in bed because she refused food and was again constipated and very languid. There was no pain, nausea or vomiting. No symptoms referable to the head, heart, lungs, kidney or nervous system. Examination disclosed moderate jaundice of the mucous membranes and skin. The liver was palpable one inch below the costal margin, not tender. Spleen not felt. Slight elevation of temperature. Physical examination otherwise negative. Urine contains considerable bile, stool light grey. After several days symptom-free, except for jaundice. Color returned to the stools after one week.

Case 3. A boy of eight was noticed to be pale, irritable, and without appetite. He was put to bed after having a large foamy loose stool. No temperature. Next day he had no complaint except languor. No pain, nausea, vomiting or other symptoms. On the second day jaundice of the skin and mucous membranes was noticed. Urine dark and stool light. Spleen and liver negative. Remaining physical examination negative. After one week color began to return to the stool.

Case 4. A boy of seven had a stomach upset, with foul breath and headache. Three weeks previously his sister had had jaundice. He temporarily improved and returned to school. At this time he showed no alteration in the color of his skin, stools or urine. One week later the conjunctivae became violently inflamed and fever developed—102° F. was the highest. No nausea or vomiting, no pain in abdomen. Anorexia. Constipated. Twelve days after onset, urine became dark. Parents had not noticed any jaundice. For a few days had had a cough and a head cold. Examination disclosed an acutely ill boy with slight jaundice of the skin and mucous membranes. Temperature 99.5° F. Pulse 110. The nose and throat were slightly red. The heart and lungs were normal. The lower margin of the liver could be felt one inch below the costal border, not tender. The spleen could not be felt. The urine showed bile. Icteric index was 15. The urine showed albumin but no casts. Blood count—W. B. C. 6,000; R. B. C. 4,130,000; Hgb., 74%. A guinea pig into whose peritoneum 5 c.c. of blood was injected, survived symptom-free.

Case 5. A boy four years old (brother of one of the first cases), was awakened at 5 A. M., vomiting phlegm. In bed all day, no temperature. Next day better. Next day had pain in his abdomen, which was relieved by enema. Temperature 102.5° F. Large foamy stool. Two more later. No temperature next day. Coughing, pain in stomach, no appetite. Three days later, dark urine (6th day). Next day vomited, pain in abdomen, no temperature, jaundiced, bile in urine. Next day stool yellow with brown streaks. Progressively better, but urine still dark on the 11th day of the disease. This case occurred three weeks after the outbreak of the contact case.

Case 6. A girl three years old (sister of one of the first cases). Severe attack of urticaria of one day's duration. Pain in abdomen, vomiting. Temperature 101° F. Two days later much pain in the abdomen, distention, belching. Temperature 103° F. Mucus in stool. Three days later, urine dark. On the 4th day, no temperature. On the 8th day, suggestion of clay colored stool. Slight jaundice noticed the same day. Bile in urine. Very yellow on the 9th day. Same day color began to come back in the stool. After the 12th day, much better. This case also occurred three weeks after the outbreak of the contact case.*

Etiology

Epidemic jaundice is recognized as contagious. A soldier sleeping in a barn with seven or eight other soldiers has been known to infect them all. However, we know neither the organism nor the method of conveyance.

Rats have been suspected of being the most important factor in the spread of Weil's disease. In Japan (40 per cent), in America (10 per cent), and elsewhere rats have been shown to harbor pathogenic leptospira icterohemorrhagiae in their kidneys, and to excrete them in their urine. Victims of Weil's disease are thought to become infected through contact with rat contaminated soil, (bare footed miners), or from articles of food to which rats have had access. These findings "seem to be particularly important in revealing a latent danger to which we have been constantly exposed, but from which we escape as long as sanitary conditions are not disturbed by untoward events." No contact with rats, however, could be shown either for our case of Weil's disease or for the eight cases of epidemic jaundic reported. Emulsions of the kidneys of a number of Richmond rats were injected into guinea pigs with negative results.

Several of our cases were tested for immune bodies. The serum of the case of Weil's disease completely destroyed leptospira icterohemorrhagiae. The sera of three of our other cases were likewise tested by Dr. Noguchi. None of them reacted to leptospira icterohemorrhagiae, but they did react to a leptospira recovered from ice box water. It was not possible to collect drinking water for examination to which our cases had access. These appear to be very suggestive results. As said, no one has yet demonstrated the organism of epidemic jaundice. A tremendous amount of work was done on it by the British during the recent war, with negative results. Dr. Noguchi's findings certainly indicate the need for further studies in epidemic jaundice, dark field examinations of blood and urine, and the inoculation of guinea pigs in all stages of the disease.

*Cases No. 7 and No. 8 were seen by Dr. J. O. Fitzgerald and presented similar symptoms.

Table I

A Comparison of Epidemic Jaundice and Weil's Disease Based on the Cases Here Reported.

Epidemic Jaundice		Weil's Disease
One week	*Duration*	Six weeks
Unknown	*Etiology*	Leptospira icterohemorrhagiae
	Immune Bodies	
For leptospira from ice box water		For leptospira icterohemorrhagiae
Intense and sudden	*Jaundice*	Slight and gradual
None	*Hemorrhage*	None
None	*Splenic Enlargement*	None
Moderate	*Hepatic Enlargement*	None
One week, slight	*Fever*	One week, high
Light	*Stool*	Variable
One week	*Bile in Urine*	Five weeks
6-18	*Icteric Index*	75
Absent	*Casts and Albumin*	Present
None	*Relapse*	One
0.4%	*Accepted Mortality*	30%

Epidemic Jaundice vs. Weil's Disease

A comparison of the two diseases here reported brings out the following differences. In our cases of epidemic jaundice the duration was one week, the icterus was of gradual onset and mild, the fever was slight, the urine was negative, the liver was enlarged and there was no relapse. No organisms were found though the sera reacted with a leptospira. On the other hand, in Weil's disease the duration was more than five weeks, the jaundice came on suddenly and was very intense, the urine showed casts and albumin, there was no enlargement of spleen or liver, a relapse occurred after four weeks, leptospira icterohemorrhagiae was demonstrated in the blood (Dr. Mulholland) and later the convalescent sera reacted to the Rockefeller strain of leptospira icterohemorrhagiae. The difference in mortality between the two diseases should be noted—0.4 per cent for epidemic jaundice against 30 per cent for Weil's disease.

III. Catarrhal Jaundice

Cocayne[15] believes that catarrhal jaundice is the sporadic or endemic form of epidemic jaundice. The French, Brulé[16] in particular, hold to the same view, regarding catarrhal jaundice as an infectious disease due to alteration in the hepatic cells and not the result of obstruction. Eppinger[17] and also Stadelmann[18] showed intrahepatic mucous, bile-stained plugs blocking the bile-canaliculi, and claimed to find them only in non-infectious icterus. The old idea of a mucous plug obstructing the ampulla of Vater is not tenable. Autopsy findings do not substantiate it and clinical experience, with gall-bladder drainage through a duodenal tube, shows the bile usually flows freely in cases of catarrhal jaundice. The occurrence of catarrhal jaundice in adolescence, the immunity conferred by one attack, the similarity of its symptoms to infectious jaundice, the occasional development out of it of Icterus Gravis, or acute yellow atrophy of the liver, point to an infectious disease involving the finer ducts and cells of the liver in varying degrees. This theory is not really in conflict with Eppinger's description of mucous plugs in the ducts, because such accumulations may easily form as a part of a diffuse cholangeitis.

There is need for more study of these very interesting outbreaks of icterus. Leptospira may be a comparatively recent invader of the human body as Noguchi suggests. As it gains in virulence by repeated animal passage, we may expect more serious consequences and a higher mortality. The relatively high mortality among the Japanese is explained also by Noguchi on these grounds. These spirochetal infections doubtless occur about us more frequently than we realize. It is important to know that though the organism may not be always demonstrable, the serum reaction for immune bodies can be done, and is as informing as the Widal reaction in typhoid fever.

Bibliography.

1. Oxford Medicine, Vol. 5, p. 723.
2. Weil, H.: A Peculiar Acute Infection, with Splenic Enlargement, Jaundice and Nephritis, *Deutsch. Arch. f. klin. Med.*, 1886, 39, 209.
3. Inada, R., Ido, Y., and others: Etiology, Mode of Infection and Specific Therapy of Weil's Disease (Spirochaetosis Icterohemorrhagica), *J. Exp. Med.*, 1916, 23, 377.
4. Ido, Y., and others: The Rat as a Carrier of Spirochaeta Icterohemorrhagiae the Causative Agent of Weil's Disease, *Jr. Exp. Med.*, 1917, 26, 341.
5. Hayman, J. M., Jr. and Lynch, F. B., Jr.: Spirochetal Jaundice in the United States, *Amer. Jr. Med. Sc.*, 1927, vol. CLXXIII, 80.
6. Personal Communication, through Dr. Noguchi.
7. Inada, R.: The Clinical Aspects of Spirochaeta Icterohemorrhagiae or Weil's Disease, *Jr. Exp. Med.*, 1917, 26, 355.
8. Willcox, W. H.: The Lettsomian Lectures on Jaundice, London, 1919.
9. Blumer, G.: Infectious Jaundice in the United States, *J. Am. Med. Assn.* 1923, 81, 353.
10. Williams, H.: Epidemic Jaundice in New York State, 1921-1922, *J. Am. Med. Assn.* 1923, 80, 532.
11. Symmers, Douglas: Epidemic Acute Hemorrhagic Jaundice of Toxic Origin. *J. Am. Med. Assn.*, 74, 1153, 1920.
12. Witt, D. H.: Acute Hemorrhagic Jaundice of Epidemic Nature in New York City, *J. Am. Med. Assn.*, 1922, 79, 1498.
13. Jobling, J. W. and Eggstein, A. A.: The Wild Rats of the Southern States as Carriers of Spirochaeta Icterohemorrhagiae, *J. Am. Med. Assn.* 1917, 69, 1787.
14. Noguchi, H.: Spirochaeta Icterohaemorrhagiae in American Wild Rats and its Relation to the Japanese and European Strains, *J. Exp. Med.*, 1917, 25, 755.
15. Cockayne—*Quart. Jour. Med.*, Oxford, 1912, VI.
16. Brule—Les Recherches recentes sur les icteres 1919.
17. Eppinger: *Wien klin. wchnschr.*, 1908, XXI, 480.
18. Stadelmann: Ikterus, Stuttgart, 1891.

300 *West Grace Street.*

ON HEMORRHAGE AS A COMPLICATION OF TONSILLECTOMY.*

By WALTER A. WELLS, A. M., M. D., F. A. C. S., Washington, D. C.

There is probably no kind of medical information which it is so important that we should possess, in an accurate and complete form, as that which concerns the surgical emergencies; for its province is not the indefinite interwoven boundary between health and disease or between disease and death, but rather the slender, delicate thread that connects almost perfect health with sudden death.

Tonsillectomy is practically always an operation of election, done to prolong life and not to save it. The patient comes to us direct from school, the work-shop, the office, and we promise that within a week or so he shall be back again at his accustomed avocation, better fitted than before for life's activities. If it happen otherwise, the fault is naturally placed at our door.

The removal of tonsils when done by a competent laryngologist familiar with his ground, versed in all the technicality of his profession, and prepared for every emer-

*Read before the Section on Ophthalmology and Otology, Medical Society of District of Columbia, February 18, 1927.

gency, must be regarded as an operation almost free from hazard.

But as you know the operation is not altogether in good repute with the general public, and the reason will appear.

A patient comes to you from his family physician, with the request that you examine the tonsils to determine if they may be the possible source of an obstinate arthritis, or of an obscure heart affection, or of repeated attacks of kidney inflammation, or of a persistent duodenal ulcer, or, perhaps, of an otherwise unexplained high blood pressure or general ill health.

You examine carefully and discover that he has soft spongy tonsils, with abundant pathological exudate easily expressed from the crypts, or that the surface of the tonsils appears ragged, irregular, deeply furrowed, with scars and adhesions which bespeak past suppurative inflammation, or that they are of the imbedded type, with dilated crypts whose contents are imprisoned by an abnormally extensive plica, or that the pillars are congested, swollen and edematous, indicating a possible pus focus; you note that the patient has enlarged cervical glands and you may see evidence of involvement of the Eustachian tube, and you may obtain history of former local trouble as an attack of peri-tonsillar abscesses. In other words, the case is such as to convince you that the tonsils are diseased, and you feel conscientiously bound to recommend their removal as a probable cause of trouble.

The patient hesitates and you inquire his reason. He will tell you frankly that he fears the outcome, and above all he fears a possible hemorrhage. Never having had a fatality in your own immediate practice, you assure him that his fears are ill-founded and that the danger is nil. And then this particular patient will recite to you instances that have come within his personal knowledge of serious accidents and even death. He tells you of an intimate friend, a relation or a neighbor who went to the hospital in comparatively good health, and, after this supposed simple operation, was taken home dead.

I have heard this and you have heard it, not once, but a number of times, and there is but one conclusion; it is that too many untrained, unskilled, inexperienced persons are performing the tonsil operation, under the impression that it is always a simple and perfectly safe procedure. And so without adequate knowledge of normal and possible abnormalities and with disregard of surgical principle, they hack and slash and mutilate the pillars, cut away the underlying muscle, and lacerate large vessels.

Schaeffer[5], in an excellent recent article dealing with anomalies in the blood supply of the tonsil region, takes occasion to mention three cases of death from sudden and excessive hemorrhage during tonsillectomy, that had come under his personal observation.

One patient was a woman and the operator a well-known specialist; the second a girl, the operation being performed by an occasional operator; and the third case a girl, the operation being done, he says, by a would-be surgeon, evidently not versed in tonsil work.

One of the most tragic incidents that I have seen recorded in the literature is that of a surgeon of Chicago who journeyed to a small neighboring town to operate on three cases at the request of a medical friend, one of the cases being his daughter. The surgeon after the operation left hurriedly, supposing all was well. The next morning over the telephone he learned the sad news that the little daughter of the physician had died during the night of a hemorrhage which could not be stopped.

Impressed with the rather prevalent rumors of fatalities attending operations upon the nose and throat, H. W. Loeb[9] undertook, by means of a questionnaire sent to physicians practicing this specialty, to collect all authenticated cases of death fatality not previously reported. Deaths from anesthetic were excluded, as likewise those attributable to some already existing known illness. In other words, they were cases in which the operations were elective and the death unexpected and apparently unwarranted. He collected 332 of such fatalities, and of these there were 41 due to hemorrhage following tonsillectomy.

H. G. Hill[6] sent out a questionnaire limited to tonsil problems and, in order to better insure obtaining desired information, specified that reports as to death due to tonsillectomy, instead of being confined to personal experience, should include all cases that had come within the knowledge of the reporters.

One prominent operator reported eleven cases of fatal hemorrhage, one reported four

cases, one reported three cases, four reported two cases. That is, of the fifty laryngologists questioned, seven reported twenty-seven cases of death from hemmorhage which had come to their knowledge.

The most recent statistics of death fatalities are those given out by F. W. Bailey. obtained by a questionnaire sent to 400 laryngologists. They are really more alarming than any one of the others. Twenty-seven out of 350 operators who replied reported death from hemorrhage following removal of tonsil, which means that out of every thirteen operators one had had death from this cause.

The hemorrhage of tonsillectomy is usually classified as primary and secondary.

By primary we mean the bleeding which occurs at the time of the operation or directly succeeding. The term secondary is applied to the bleeding which occurs several days after the operation, due to reopening of vessel from separation of slough or surrounding necrosis.

A hemorrhage which occurs comparatively often only a few hours after the operation and often referred to as secondary, is not strictly secondary at all, but a delayed primary hemorrhage. It is due to the fact that some bleeding was overlooked or not sufficiently stopped at the time of the operation.

Real secondary hemorrhage does not occur until forty-eight hours after the operation, and may occur on the third, fourth and fifth day and even later. Dr. V. Dabney[2] has reported some interesting cases of late secondary hemorrhage following tonsillectomy, one as late as the tenth day.

Hemorrhage is a most deplorable complication of the tonsil operation, even when the final outcome is fortunate.

Occurring at the time of the operation, it lengthens the duration of the anesthetic, increases the amount of shock and retards recovery, and, if it has necessitated much instrumental manipulation, or the sewing of the pillars or the retention of sponges or of some hemostatic apparatus, the patient is in for much local reaction and a generally disagreeable epicrisis.

If the hemorrhage occurs subsequent to the operation, it may prove very disturbing for surgeon as well as for patient, for now the surgeon has to deal with a patient who has just been through an ordeal, whose resistance is lowered and his nervousness and anxiety increased, while his throat is too sore and painful to tolerate manipulations.

Just how frequently hemorrhage of such severity as to be a serious complication occurs, it is difficult to say, for, appearing in all gradations of severity, it is subject to arbitrary distinctions, and besides. unfortunate experiences are insufficiently reported.

According to Yerger, out of a thousand tonsillectomies done at Johns Hopkins in 1911, there were thirty-eight cases of troublesome hemorrhage, twenty-six of which were designated as slight and twelve as severe.

Cocks[1], in 1912, stated that at the Manhattan Eye and Ear Hospital, with an average of 200 cases of tonsillectomy per month, there were always about eight to twelve cases each month of severe past-operative hemorrhages.

O. Wilkinson[13], in 200 consecutive cases of tonsillectomy under local anesthetic, had four cases of primary hemorrhage and three of secondary (one to thirty). Mygind[10], in 171 cases under local anesthetic, all adults, had to contend with fourteen cases of secondary hemorrhage (about one in every twelve), while R. McKinney[14] reports that he encountered four cases of severe hemorrhage in a series of fifty cases of tonsillectomy done under local anesthetic using the Sluder method.

Dr. Beaman Douglas[7] reports that there were 1,560 cases of tonsillectomy done at the Post-Graduate Hospital in New York in 1919, and that in more than six out of every hundred the physician had to be summoned to the ward after the operation on account of bleeding. H. A. Barnes[11] states. in 140 cases of tonsillectomy in adults, the hemorrhage was of such gravity to require suturing of the tonsil in four patients (that is one for every thirty-five).

At the Episcopal Hospital, this city, there are no records kept of incidence of hemorrhage, but I took occasion to question different members of the House-Staff, and, comparing their answers, I gathered that on an average of twice a week there is a summons from nurse to room or ward on account of a post-operative bleeding, and that on an average of twice a month a patient has to be taken to the operating room and re-anesthetized on account of hemorrhage not otherwise controlled.

Now and then some surgeon makes the

statement that he never has any trouble on account of hemorrhage. Recently, such a remark was made by a prominent laryngologist in this city in the presence of a hospital interne, who had on that day been called to the bed-side to stop a very troublesome hemorrhage in a patient operated on by this same surgeon. The interne did not think it was a good occasion to add to the sum of this surgeon's experience, but he added a little, silently, to his own. As an illustration of the hazard of the attitude of unconcern, I must refer to a recent experience of my associate, Dr. E. R. Shepherd. An operation having been done by a certain surgeon at a certain hospital in this city, the patient was allowed the next day to go home. Two days later the patient was brought back to the hospital on account of bleeding. The surgeon in the case, not being available, on account of departure from the city, the interne undertook to stem the bleeding under general anesthetic. It was only temporarily successful, for later on the same day, the hemorrhage continuing, another attempt was made under general anesthetic to stop it. But the bleeding persisted, and that evening Dr. Shepherd, being called, found the patient exsanguinated, and in a state of extreme collapse. Now for the third time the patient had to be subjected to general anesthetic. This time, fortunately, the result was permanent, for, after several sutures in the bleeding area, there was no return of the hemorrhage.

A question that is frequently and sometimes almost acrimoniously discussed is whether the incidence of hemorrhage is greater with the operation done under local or general anesthesia. It is certain that the bleeding attending the operation can be brought to a minimum with the local anesthetic when combined with adrenalin.

But there is always some reaction from the latter agent, which must be in proportion to the concentration, and this will naturally tend to bring about delayed primary hemorrhage. A certain proportion of cases besides have an unpleasant idiosyncracy for this drug.

With ether there is usually freer bleeding at the time of the operation, but this is in a sense a guarantee against trouble as it stimulates the operator to greater care in effecting a complete hemostasis at the time.

During my military service overseas, following the policy then in force with the medicals corps of the army, I performed a great number of tonsillectomies by the local anesthetic method; and I must say I was impressed with a proportion of after-bleeding to which I had not been accustomed in my civil practice, with operations done for the most part under general anesthesia.

In addition to all the danger of a hemorrhage *per se*, we may have to involve in the charge against it a complication that follows sometimes in its wake and believed by certain authorities to be directly due to its occurrence. I refer to the pulmonary abscess, to which the attention of the profession was especially directed by Dr. C. W. Richardson[12], in 1912. Since then a number of cases have been reported in various parts of the country. Mayer, for example, reported in 1916 as many as nine cases having come under his personal observation in the Mt. Sinai Hospital in the course of a single year.

According to some authors the pulmonary complication is to be attributed to a thrombosis of the veins in the tonsillar bed. others to inspiration of septic material from crypts, while still others believe it is due to the presence of blood in the pulmonary organ.

It should be mentioned that Myerson[8] has shown by a routine direct laryngoscopy and tracheo-bronchoscopy of a large series of cases, even when extraordinary precautions have been taken, that some blood will practically always be found in the tracheo-bronchial tree.

The careless opening of veins in a region that is naturally septic should not be lightly regarded, and there is in the possible occurrence of pulmonary abscess as a complication additional reason for extreme care both in preventing hemorrhage and avoiding traumatisms that induce sloughing and necrosis of the tissues.

With regard to hemorrhage, it is well to keep in mind all causes that might predispose to its undue occurrence. First of all, one must consider the possibility of anomalous disposition of the blood-vessels and always before operating there should be a survey of the fauces to discover the presence of unusual pulsations in the tonsil region. A strong visibly pulsating posterior pillar may indicate an aberrant internal carotid which

can in some cases come into very dangerous proximity.

Some operators are in the habit of operating immediately after recovery from an acute inflammatory process in the tonsils or pharynx. This I regard as a very bad practice and responsible not only for a greater than normal bleeding, but also giving rise to much local reaction and danger of infection. One should never operate under two weeks following an acute tonsillitis or peri-tonsillar abscess.

Disease of the kidney, uncomplicated heart lesions, and certain vascular and circulatory diseases are known to greatly favor bleeding.

Every patient should, then, have the benefit of a preliminary general examination, and in the case of adults special attention should be given to the state of the arteries and the degree of the blood pressure.

Of the blood dyscrasias, most emphasis is placed upon a condition designated as hemophilia. This term, however, is very loosely used, and we are convinced that true hemophilia is exceedingly rare.

The coagulation test as a guide to probable hemorrhage is in many hospitals now a routine procedure. Nevertheless, grave doubt has been cast upon its value by recent observation. The average normal time is supposed to range between three and one-half and four and one-half minutes, but Dr. George Richards[4], in a study of a series of 500 cases in which the test was made, noted that in none of the cases in which hemorrhage occurred did the time exceed four and one-half minutes; while in more than 100 of the 500 cases there was a coagulation time of five minutes or greater.

Can we do anything to increase the coagulation of the blood *in vivo*, and so lessen the tendency to hemorrhage? For this purpose various agents have been brought forward which, in certain quarters, especialy manufacturing, have been highly recommended, but experience has not generally supported these optimistic claims. Supra-renal gland extract, pituitary gland extract, emetin, thromboplastin, coagulose, are among the agents exploited for this purpose. On the theory that the coagulation of the blood depends upon the concentration of calcium some authors advise its administration in the form of the lactate for several weeks beforehand in case of a suspected bleeder. But the most recent laboratory test contradicts the claim that dependence can be placed upon this practice.

As it appears, then, that we have neither reliable means for predicting hemorrhage, nor reliable means for preventing it, our efforts must be in the direction of providing measures for control in the event of its unforeseen occurrence.

Some of the agents which have been advocated as valuable, hypodermically administered, for the prevention of hemorrhage, are put up also in a form for local use and advised to be employed in this way to induce clotting and help in overcoming hemorrhage.

Thrombo-plastin is perhaps the best of these, and, applied directly to a bleeding surface, will no doubt have some effect in lessening the general oozing from the surface, but it can naturally be of no value in controlling a vessel that is spurting or bleeding at a lively rate.

This is the criticism that must apply in the case of all local styptics. whether they be in the class of astringents, vaso-constrictors or coagulants.

Dioxygen, antipyrine, gallic and tannic acids, and Monsell's solution are still given a place in the text-books, but have lost standing as a part of the armamentarium of the modern operation room.

Experience shows that they only lessen the general oozing which would in a short time stop spontaneously and they are absolutely useless in a case of serious hemorrhage; moreover, vaso-constrictors are followed by a reaction and the coagulants produce an ugly clot under which concealed bleeding still continues.

Horse-serum, it is thought, has in some cases had a favorable influence in the control of hemorrhage, but it may induce very severe antiphylactic phenomena, and there are some reports of actual fatality from its use.

Of instrumental measures to control hemorrhages from the tonsil, there is much variety in practice and opinion.

There are on the market a dozen or more different models of special hemostats to make constant pressure over the bleeding area. They are so constructed as to be self-retaining, one blade pressing against the tonsil fossa and the other against the outside of the cheek. Besides being exceedingly painful

to the patient, they tend to promote sloughing of the parts, which in our estimation are fatal objections to their employment.

Sewing together of the pillars is advised and practised as a proper means to stop hemorrhage that cannot be controlled by simple pressure or use of the hemostatic forceps. This is, in our mind, a very unsurgical way of side-stepping the practice which prevails in all surgery elsewhere, of directly seizing and ligating the particular bleeding vessels, and it is sure to be followed by much unpleasant reaction.

This is all the more true when the fossa is full of a gauze or cotton pack, and the pillars sewed over it.

After all is said and done, the best, safest and most reliable measure is the immediate ligating of the bleeding vessels in the wound. The only objection to its general use is the difficulty in its performance. Special hemostatic forceps have been designed to facilitate the transit of the ligature loop over the point of the instrument, and to aid tying of the thread.

The technical difficulties, however, are never mastered by some operators, and the time consumed in the procedure may be a serious objection. The suture ligature is the best solution of the problem for many operators, though this too is difficult in throats of a certain conformation when the bleeding vessel may be almost inaccessible, as, for example, in the extreme end of the lower pole near the base of the tongue. Besides, there is a possibility of snapping the needle in the throat in an attempt to force it through the tissues.

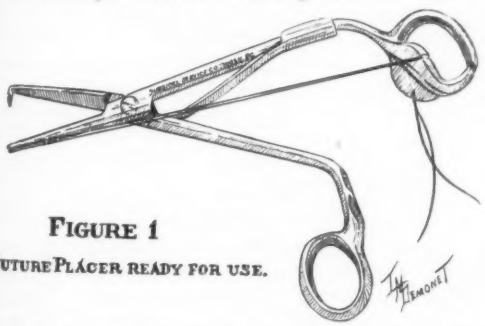


FIGURE 1

SUTURE PLACER READY FOR USE.

We have been using with much comfort for a number of months, a special suture placer of our own design, which enables us with entire ease to place a suture in any part of the tonsil fossa we desire. The instrument is so constructed that as soon as the thread is drawn through the tissues, it become automatically released from one blade of the instrument, while the other end is brought out through the mouth so that it can be readily seized and tied.

The facility with which the suture can be placed without loss of time leaves no excuse for overlooking a bleeding area, and of late we have been in the habit of placing ligatures as a routine at special points, as the best guarantee against post-operative hemorrhage.

When we consider all the discomforts and dangers of hemorrhage, and especially the grave possibility in some instances, we should not hesitate to exercise the most scrupulous care and precaution to avoid it, for certainly over-precaution is well repaid if it means the saving of a single case in a whole life time of practice.

BIBLIOGRAPHY

1. Cocks, G. H.: *Medical Record*, N. Y., 1912. LXXXI. 1032.
2. Dabney, V.: *Ann. Otol. Rhin. & Laryng.* St. Louis, 1919. XXVII. 697.
3. Yerger: Tonsillar Hemorrhage. *Illinos M. J.*, Chicago. 1919. XXV. 142.
4. Richards, G. L.: Report of 500 Cases of Consecutive Tonsillectomies in Relation to Coagulation Time. *Bost. M. & S. J.*, February 12, 1925.
5. Schaeffer: Aberrant Vessels in Surgery of the Palate and Pharyngeal Tonsil. *Jour. A. M. A.* 1921. LXXVII. 14.
6. Hill, L. G.: Hemorrhage Following Tonsillectomies. *Jour. Lancet, Minneapolis.* 1919. XXXIX. 170.
7. Douglas, B.: *Laryngoscope*, St. Louis. 1920. 476.
8. Myerson, M. C.: *Laryngoscope*, St. Louis. 1922.
9. Loeb, H. W.: Fatalities Following Operation upon the Nose and Throat Not Dependent Upon Anesthesia—A Study of Three Hundred and Thirty-five Hitherto Unreported Cases. *Transact, Ann. Laryng., Rhin., & Otol. Soc.*, 1922. 168.
10. Mygind: *Centrabl. f. Laryngologin*, Berl., 1918. XXXII.
11. Barnes, H. A.: The Tonsils. C. V. Mosby Co., St. Louis. 1923.
12. Richardson, C. W.: Abscess of the Lung Following Operation on the Tonsil and Upper Respiratory Tract. *Laryngoscope*, St. Louis. 1916. XXVI. 1001.
13. Wilkinson, O.: Two Hundred Consecutive Cases of Tonsillectomy Under Local Anesthesia. *Laryngoscope*, St. Louis. 1917. XXVII. 667.
14. McKinney, R.: Tonsillectomy in the Adult Under Local Anesthesia by the Sluder Method. *Laryngoscope*, St. Louis. 1920. XXX. 429.
15. Bailey, F. W.: The Control of Hemorrhage in the Tonsil Operation, *Jour. Iowa State Med. Soc.*, June, 1922.

The Rochambean.

SURGICAL TREATMENT OF GASTRIC AND DUODENAL ULCER.*

By STEPHEN H. WATTS, M. D., F. A. C. S., University, Va.
Professor of Surgery, University of Virginia.

When I accepted the invitation to present a paper on "Gastric and Duodenal Ulcer" at this meeting, I said that I hesitated about adding to the volumes which have been written on this subject in recent years. The very abundance of this literature probably attests the unsettled state of the subject and I believe the problem of the treatment of these conditions will remain largely unsettled until we know more about their etiology. In the case of gastric ulcer, as someone has said, we seem driven to remove the organ in which the lesion occurs, and this is very much like amputating the leg for varicose veins.

In a recent thorough study of the etiology and pathology of peptic ulcer, Levine reached the following conclusions: (1) Peptic ulcer starts as an erosion; (2) Erosions may be produced by mechanical, chemical or physical causes, circulatory and nervous disturbances, infection, and allergic phenomena; (3) Erosions in the region of the Magenstrasse (gastric pathway) do not heal readily because of its peculiar structure; (4) Erosions are converted in peptic ulcers by the destructive action of the acid gastric juice; (5) The isthmus, pyloric canal, and first portion of the duodenum, because of the resistance they offer to the acid chyme, are particularly liable to be involved in ulcerative processes. These conclusions seem to cover very well the current views concerning the factors possibly involved in the production of these ulcers.

Acute gastric or duodenal ulcers can be produced experimentally in animals with relative ease and by various methods, but they show a great tendency to heal and not to become chronic. Mann and Williamson have, however, been able to produce typical subacute and chronic ulcers in the jejunum of dogs in which they did a "functional resection" of the duodenum, that is, they divided the stomach at the pylorus, closed the end of the duodenum, divided the jejunum and sutured the distal end into the end of the stomach and then anastomosed the proximal end of the jejunum with the lower ileum, thus exposing the jejunum to the acid gastric juice unmixed with the secretions which normally neutralize it. These experiments would seem to prove the important part which the acid gastric juice plays in the production of gastric and duodenal ulcers.

You are all familiar with the work of Rosenow, who has called attention to the role of infection in peptic ulcers. In the light of our present knowledge we insist upon the eradication of foci of infection in the treatment of peptic ulcer; however, I believe that, while infection may cause the initial lesion in some cases, other factors probably account for its becoming chronic.

There has been much discussion regarding the relative value of the medical and the surgical treatment of peptic ulcer. The results of medical treatment in the hands of certain men seem to compare favorably with some of the surgical statistics. This question will probably not be settled until many large series of cases treated by each method are painstakingly studied for many years. I think that any fair-minded person will acknowledge that there is great good in each and that the best interest of the patient demands the close cooperation of the internist and the surgeon. The fact that most surgeons insist upon medical treatment after operation indicates that they have some faith in such treatment, and most of us are disinclined to operate until medical treatment has been given a thorough trial. We would expect better results from medical treatment in the earlier stages of ulcer as the conditions for healing in the old ulcers with dirty, fibrotic base and overhanging edges are not good.

For many years gastro-enterostomy with or without excision of the ulcer has been our chief dependence in the surgical treatment of this condition. In spite of some findings to the contrary, I believe that a well placed and well executed gastro-enterostomy facilitates the emptying of the stomach and diminishes the acidity.

Since the vicious circle has been largely conquered by perfected technique, gastro-jejunal ulcer has become the chief complication of gastro-enterostomy. It was my fortune in 1903 to write the first article in English on jejunal ulcer following gastro-enterostomy. This ulcer occurred in a dog upon which I had performed a gastro-enterostomy several months before, perforation of the ulcer being found at autopsy to be the cause of the animal's death. I was much interested in the specimen and on investigation I found that

*Read at the Sectional Meeting of the American College of Surgeons, Washington, D. C., January 18, 1927.

fourteen such ulcers had been reported in the German literature. I did not think at the time that the subject would ever assume the lively interest which it has.

While other factors, such as trauma and infection, may enter into the production of these ulcers, I believe that the acid gastric juice is the chief factor concerned in their production. In my comparatively small series of cases of gastro-enterostomy, I have fortunately had little trouble on this score, possibly to some extent due to the fact that I do not use intestinal clamps.

The best treatment of this complication is probably partial gastrectomy. I have recently seen a case in which I operated two years ago for a gastro-jejuno-colic fistula which had followed a gastro-enterostomy performed elsewhere. In this case I was unable to do a partial gastrectomy owing to numerous adhesions about the pyloric end of the stomach; therefore, I resected the jejunum and made a new gastro-enterostomy. He was perfectly well and happy.

Some authors claim that gastro-enterostomy for gastric or duodenal ulcer does not restore the stomach to a normal physiologic condition, that it is liable to complications, and that it fails to completely cure the patient in a considerable percentage of cases. They, therefore, advocate the doing of some kind of pyloroplastic operation whenever it is at all feasible. The old Heineke-Mikulicz pyloroplasty is seldom done. The Finney pyloroplasty or gastro-pyloroplasty is a valuable operation in selected cases, and in his hands has had a wider range of usefulness. It is chiefly applicable, however, where the gastric and duodenal mobility are good, where perigastritis is absent and where the pylorus is not involved in scar tissue. In 1914 Finney reported 100 cases treated by this method. Five died shortly after operation and seventeen were not traced. Ultimate results were found to be satisfactory in 93.6 per cent of the seventy-eight cases which were examined. Horsley has devised a method of pyloroplasty which perhaps has certain advantages over that of Finney but it seems to me that his method is subject to the same limitations, as noted above.

I think it may be said that surgeons are directing more and more attention to the removal or destruction of the ulcer itself, rather than relying upon gastro-enterostomy or pyloroplasty alone. This is due to the fact that the latter procedures have been followed in a considerable number of cases by recurrence of the ulcer, by bleeding, and in the case of gastric ulcer by malignant change. In this connection it is interesting to speculate as to why we practically never find cancer developing in a duodenal ulcer.

While realizing that the results obtained by the methods outlined above were far from ideal, we were moderately well satisfied with them until recently. Extensive series of cases have been reported by Balfour, Sherren, Peck and others in which the results were said to be satisfactory in 80 to 90 per cent of the cases; however, in many of the Continental clinics and some American clinics the results were far from satisfactory. Lewisohn, in a study of the cases operated upon at the Mt. Sinai Hospital from 1915 to 1920, found that gastro-enterostomy effected a perfect cure in less than 50 per cent of the cases and there was secondary ulceration in 34 per cent of these cases, whereas the usual incidence of this complication is said to be 2 to 5 per cent.

Many European surgeons are now doing extensive gastrectomies for gastric and duodenal ulcers and their example is being followed by some in this country. The object of this operation is to remove the ulcer and at the same time to reduce the acidity by removing that portion of the stomach which regulates acid production. Mayer, Brams and Graves studied twenty-two cases in which this operation had been done for gastric ulcer and found a total absence of free hydrochloric acid in all of the cases.

Moynihan, Haberer, Finsterer and Pauchet, who are among the chief exponents of partial gastrectomy for ulcer, report an operative mortality of 2 to 3 per cent, which is little more than that of gastro-enterostomy. While this mortality may prevail in the hands of such expert operators, I believe it would be much larger in the average surgical clinic, though I grant that this is not a valid argument against the procedure, provided it is justified on other grounds. It is certainly a very grave, mutilating operation and seems to greatly diminish or even destroy the gastric acidity, and who can now say that this is an inconsiderable matter? In the light of our present knowledge, would it not be better to reserve this very radical operation for cases in which it seems particularly indicated? I

wonder how many of us would like to have this operation done on us for an ordinary duodenal ulcer. I think partial gastrectomy is probably the operation of choice in certain gastric ulcers, particularly the large ones with possible carcinomatous changes.

What procedure shall follow the gastrectomy is largely a question of personal experience and choice. I believe the Polya-Balfour operation will prove the safest and best in the average hands.

Braithwaite has advocated doing a cholecyst-gastrostomy in certain inaccessible ulcers of the stomach, on the ground that the bile thus diverted into the stomach lowers the gastric acidity and promotes healing of the ulcer. He reports eighteen cases treated in this way with gratifying results, but he does not report his cases in detail and does not give the results of gastric analysis before and after the operation. Some years ago Grey studied the effect of cholecyst-gastrostomy on the gastric acidity in dogs and found that the presence of bile in the stomach throughout the course of digestion had no appreciable effect on the acidity of the gastric contents. This procedure in gastric ulcer may be worthy of further investigation.

SOME CONSIDERATIONS PERTAINING TO NASAL PATHOLOGY.*

By WILLIAM C. MOOMAW, M. D., Petersburg, Va.

For the purposes of this paper, and without any claim to mastery of the subject, nasal pathology is imposed upon certain definite factors the chief of which are: (1) Morbid anatomy and histology; (2) Tissue resistance, local and systemic; (3) Certain bacterial and chemical agents and irritants; (4) Perverted physiology, hygiene and habits.

Associated with the first factor are observed such conditions as septal spurs, ridges and deviations; narrow noses crowding intranasal structures, and hypertrophied and cystic turbinates; growths, including tonsils and adenoids; congenital and post-operative atresias; and foreign bodies. These constitute the usual findings in nose examinations, and give rise to some form or degree of nasal *obstruction* to one or more of the nasal functions, including breathing, drainage and ventilation of the sinuses, phonation and olfaction. Tissue contacts, associated with or produced by the above mentioned conditions, give rise to intranasal *pressure*, the precursor of irritation, congestion, stasis, and inflammation.

Secondly, considerations of tissue resistance lead us into fascinating fields of study. Advances in immunology have given us more or less definite measures of prevention. Familiar now are the various foreign protein and bacterial tests, including the Schick and the Dick tests, but we of the rank and file of the profession have, probably, not availed ourselves of the means at hand for determining the susceptibility of our patients to infections and sensitizations, particularly as related to those allied diseases known as nasal and bronchial asthma, hay fever and vasomotor rhinitis. The urge to give our patients the best and the most that preventive medicine has to offer should come from an alertness within our own trained minds. We should not wait to be lured into line by enthusiastic and enterprising biological chemists and pharmacists, however efficient and commendable their contributions may be.

Thirdly, the virulency of bacterial organisms found in the nose and accessory sinuses, and the wide distribution of these disease processes by continuity of tissue, through the lymphatics and the blood channels, often with frightful results, have not aroused us to a sufficient recognition of *all* of the sources of such organisms, nor to the various modes of transmission of these agents.

With the great "flu" and similar epidemics we have a loquacious familiarity, but in so far as a comprehensive and thorough-going knowledge and control of the transmission of such and similar diseases are concerned, we must be assured that, as yet, our success has been but partial.

Much has been achieved, but we have not gone far enough in educating the public mind as to the evils of spitting, blowing the nose to the winds, coughing and sneezing. Local governments have not gone far enough with our well-equipped Health Boards in regulating the methods of sweeping our streets and sidewalks. whereby sporiferous and germ-bearing particles are stirred up to a ruthless rampage. The incriminating Petri dish, exposed for a few moments to the air and then incubated, once so awe-inspiring, now fails to elicit much concern.

Do we know more or do we know less of

*Read at the meeting of the Southside Virginia Medical Association in City Point, March 8, 1927.

transmission? We overlook such sources as house-dust, made infectious by germ-filthy shoes and clothing; infected pockets from contaminated handkerchiefs, which doubtless often re-infect the patient; infected but well advertised swimming-pools which harbor millions of bacteria from infected noses and throats of swimmers, as pointed out by Shore of Des Moines; infected tonsils and adenoids impregnating the saliva and mucus with bacteria and toxins, and carried into the post-nasal and nasal spaces in several ways, chiefly by blowing and sneezing; the eyes, always exposed, and frequently becoming involved in catarrhal and grippal waves, as indicated by redness and smarting of the lids, may be the initial link in the chain of acute respiratory disorders;—these are some, and often unsuspected, sources of infections leading to nasal pathology.

Fourthly, the relation of perverted physiology to nasal pathology is sufficiently apparent not to require discussion here.

Just a word about hygiene and habits. It seems trite and common-place to refer to such things as food, clothing, exercise, elimination, ventilation, and social usages, but the so-called common-place things are the little blocks upon which our theories rest

The march of civilization brings somewhat which tallies for disease. A certain perverseness of the age strikes the "jazz" trail, and like "Zig-zag" Ike, steers wide of "the ancient landmarks". Gone are the simple modes and manners of our forebears; gone, for instance, is the simple diet of the early days. We split our wheat with patent rollers;—the cows get the food, we get the firmentation and the constipation. Patent processes have striven for delectable dishes until our palates are enticed and over-stimulated, so that masses of the people have become heedless stomach-stokers. Over-eating ranks high as a cause, not only of nasal disorders, but of general diseases as well, and is a serious menace to health because of its apparent innocence, its insidiousness, and its un-get-atable-ness. Gone are the warm-woven garments which protected us from wintry blasts, and have come scant, flimsy fabrics which fashion drapes about our cold extremities and our blood-bleached bodies, and have come, therefore, "colds", coughs, and a distressing increase in the great "white plague". Gone is the warm, radiant hearth, Nature's best rubifacient for cold, anemic feet and limbs, and have come, to the poor, those nefarious, ill-smelling, oxygen-consuming oil-heaters, and to the rich, weather-stripped, super-heated houses and offices, with downy-cushioned motor cars to convey our flaccid bodies between the two. Gone are the flickering candles that sent us to early retiring after the day's demands had depleted the body forces, and have come the brilliant Mazdas that lure the jaded brain and body far into the night and to delayed rising and delayed body functions. Gone are the days of discretion, especially with the younger folk, and have come the days of excesses in one form or another; as, for instance, hours spent in aquatic sports, subjecting the body to low temperatures for prolonged periods: result, congested and hypertrophied turbinates with concomitant evils. Excessive use of tobacco, the smoke of which is irritating to the mucous lining of the nose, is a present and underestimated evil. Excessive and very prevalent use of the sugars—at least one alcohol beyond the pale of prohibition—is chargeable with many body evils, not the least of which is irritation of the mucous system, often giving a characteristic, raw-ham appearance to the lining membrane of the nose. All these and many other etiological factors, however poetic and fanciful they may sound, have a direct bearing on pathology of the nose.

Some might object that, despite all this, longevity has stretched in the last twenty-five years from forty-five to some fifty-six years; —*yes, despite all this, not because of it.* Were it not for modern medicine holding the bulwarks of Health against the onslaughts of indiscretion, these figures would be down, not up.

Turning now to view nasal pathology from another angle, we desire to note certain symptoms which point thereto.

The symptoms, both subjective and objective, which serve as a directory of nasal pathology, are produced by two main classes of conditions, which, for convenience, may be classified as *non-inflammatory* and *inflammatory*, the latter into *suppurative* and *non-suppurative*. The non-inflammatory findings constitute the obstructions above referred to, or at least some of them.

Nasal obstruction is not a simple matter. The immediate discomforts of nasal obstruc-

tion and tissue contacts are often pathetic, but the greater evils lie in the remote resultants which eclipse the original state.

Do we fully appreciate and weigh the results of interrupted breathing? The mere difficulty of breathing may, and often does, interfere with respiratory rhythm. Snuffling, sneezing, blowing the nose, "catching the breath", un-gear the respiratory "timer". This is carried to a pathetic climax in nursing infants, struggling and scrapping at once for life's two chief essentials, air and food.

Nasal obstruction limits not only the quality of breathing, but the quantity as well. These respiratory derelicts simply try to do with less air. Inhalation, therefore, is fractional, and the thoracic capacities are but partially developed. The respiratory function, from the respiratory center all the way down, must be educated and raised to full capacity. This cannot be done with an obstructed nose.

Mark Twain said, in substance, that he heard a lot of discussion of the weather, but nobody seemed to do anything about it. Considerations of nasal pathology are useless unless they bring relief. It is in this light, therefore, that we consider these symptoms.

Mouth-breathing is a harmful and unnecessary evil. To greet "the incense-breathing morn" with dry lips and mouth, parched and puckery tongue, a desiccated throat and trachea, is, to say the least, robbing Health of one of her great exhilarations.

Then come the characteristic changes in physiognomy—the relaxed lower jaw, relaxed and thickened lips, pinched alae and narrow vestibule, listless eyes, and a dull, heavy, all-over expression.

More devastating than this, and far more serious, is obstruction to drainage and aeration of the accessory sinuses of the nose. Narrow or retracted nasal bones and pinched-in nasal processes of the maxillary bones, high deviations of the nasal septum, hypertrophied and cystic middle and superior turbinates, and hyperplastic or thickened mucosa or supporting structure, with blocking of the ostia and canals of the sinuses, are definite entities, which foster further and more serious pathology.

A blocked sinus is a potentially diseased sinus. It is a pathological "no-man's-land" which may be harassed at any time by bacterial barrages. The oxygen therein is absorbed, negative pressure ensues, followed by sensitive sinus walls, congestion, stasis, impaired or exfoliated epithelium with loss of function and resistance,—a prepared soil for infections, degenerations and polyp formations.

Here, as elsewhere, Nature turns on the red light signals: The "morning drop" of mucus from a water-logged membrane; morning sneezing from puffy, impacted middle turbinates, made worse by recumbent position of the night; a sense of fullness and heaviness between the eyes, with a desire to blow the nose; tenderness of the globes associated with eye movements, and sometimes slight blurring of vision—"a skim over the eyes"; *headache*, especially the morning type, wearing off by night, and of a fairly definite character—the so-called "vacuum headache" of Sluder. The prevalence of these headaches and the very great importance of this symptom, pointing as it does to an unsuspected, insidious, primary pathological state in the nose, leads me to quote Sluder's words relative to it:

"A low grade, unending headache is established by closure of the frontal sinus, without nasal signs or symptoms, that is, obstruction or secretion, and is made worse by use of the eyes. These patients have ocular symptoms only. The air is partly absorbed in the sinuses and the negative pressure makes the walls sensitive.*

"The floor of the sinus is its thinnest wall and has attached to it the pulley of the superior oblique. The sensitive floor is pulled on by use of the eyes. * * *

"This class of cases never has pus in the nose; never has the severe pain produced by suppurating sinuses; and never is complicated by blindness or changes within the globe. The eye disturbance is of the nature of asthenopia. They are almost always closed frontal sinuses which are otherwise normal. Occasionally it is the anterior ethmoid labyrinth which has become closed. * * * Ewing was the first to recognize these cases and to describe the symptoms, which briefly are: 'Inability to use the eyes for near work because of headache which is produced thereby, and which is not relieved by glasses nor eye treatment'. The headache is frontal, usually: very rarely it is referred to the external angle of the frontal bone. It is frequently

*This idea was advanced by P. McBride in 1891.

present on rising, but grows worse on using the eyes. The pain never reaches the intense degree of that produced by confined empyema, but is quite sufficient to prevent the use of the eyes. Occasionally a patient relates that 'blowing the nose is sometimes accompanied by a squeaking sound and sensation of air running up to the brain', which is followed very soon by temporary relief of the discomfort. I have often had them say, 'I feel something crawling up in my forehead'".

The optometrist throws out a drag-net for this class of patients and fattens on them. When a patient under presbyopic age tells me he has had his glasses changed one or more times, I usually want to see the nose, not the eyes.

There is one condition which closely simulates the above picture. The symptom-parallel is sufficiently interesting to call for a word: I refer to the headache caused by intestinal stasis and auto-toxemia. This may so nearly duplicate the symptom-complex quoted from Sluder that, at times, it is difficult to differentiate the two. Whether this be a separate entity or whether retained toxic solids and liquids aggravate the already present nasal condition, adding, as some one aptly said, "the last straw", I am unable to say. A high enema, unloading the intestinal tract, will clear up one type of these cases, and probably relieve others. Before giving a final verdict incriminating the nose, I usually order thorough elimination by means both of medication and enemas. Parenthetically, and to those of us who operate in the nose, I know of nothing that brings more relief and leaves a more grateful patient than to deplete a post-operative congestion and fullness in the nose than by elevating the head and shoulders, heating the feet and lower limbs, and unloading the large intestines. Try it.

During the past several years in studying and treating these headaches, I have been struck with a decided psychological phase which many of these patients present,—a mental picture which is more marked in the severer types of nasal involvements, but which is also evident in the type under discussion.

A large percentage of these patients when interrogated will give a history of dizziness, mental depression, despondency, impaired memory, absent-mindedness, feeble concentration and co-ordination. They state that in reading the eyes follow the lines but they cannot repeat what they read. They cannot add a column of figures with certainty of accuracy. These symptoms may be ephemeral. The patient may be "feeling fine", when suddenly these dark clouds will pass over the sensorial sky. Patients with more serious sinus pathology may be morose, non-communicative, hypersensitive, introspective, and hypochondriacal. They usually have narrow faces, narrow interpupillary spaces, narrow noses and narrow nasal fossae.

Pathology incident to *inflammatory* processes, both suppurating and non-suppurating, is manifested in most cases by fairly consistent symptoms and signs. Head and face pains in acute and chronic stages usually indicate either a closed empyema or an involved nerve or ganglion. Acute suppurative frontal sinusitis probably causes the severest pain. Chronic sinuses may cause moderate, non-pulsating pain when the drainage is blocked or inadequate, or when nerve tissue is affected. Sinus infections are often overlooked, because the pain therefrom is often remote and enigmatic. It may be reflected to many points and areas about the face, head and neck.

About three years ago I had a woman some forty years of age referred to me with a supposed mastoiditis on the right side. The whole mastoid process was excessively tender and painful. Even slight pressure caused pain. The external canal walls and the drum membrane did not tally with the symptoms. X-ray of the mastoid discouraged an operation. The nose was examined and the patient again X-rayed. Pus or granulations was reported in the *left antrum* which was irrigated for a period of time. The first irrigations showed pus, and the mastoid symptoms quickly cleared up.

Lyman, of St. Louis, in a paper on "Simulated Mastoiditis Relieved by Sphenoidectomy", cites several cases, in the summary of which he said, in part: "In each of these cases, while the tenderness was very marked over a large area, there was a point of extreme sensitiveness a short distance back of the mastoid process. This tender point is quite constant in nasal ganglion headaches. Operations on the mastoid had failed to relieve the pain. Cocaininzation of the nasal ganglion afforded practically no relief. Opening the sphenoid and ethmoid sinuses resulted

in marked amelioration of the mastoid symptoms."

Sinus infections, *per se*, are usually not disastrous, but metastatic flare-ups may prove to be so. Complications are less liable in sinusitis, probably because the focus is in tissues always at rest, housed, as the sinuses are, in rigid bone. Just the opposite of this desideratum is observed in apical infections of the teeth, the tooth acting as a plunger to pump bacteria and toxins into conveying channels.

Frequent "colds", purulent otitis media, and even dangerous mastoid infections, especially in children whose tonsils and adenoids have been cleanly removed, may be traced to an unsuspected sinus infection. I recently treated a girl of fourteen years of age, who was anemic, no appetite, underweight, had had some ear pains, and "colds all the time", as the mother stated. The X-ray reported pus or granulations in the antra, which were opened up through the nose and treated. All symptoms showed marked improvement and relief.

F. E. V. Shore, in a splendid paper on "Antrum Infections as an Etiological Factor in Remote Pathological Changes", reports, among others, this case: "Some three years ago while searching for the cause of an acute suppurative otitis media in a lad, on whom a perfect tonsillectomy had been performed some years prior, I decided to wash the antrum, and, much to my surprise, obtained a drachm of pus. This was done every day for three washings with a complete cessation of the aural discharge, although no medication has been made to the ear." Similar citations could be limitless, as I am sure the case files of most nose specialists will testify.

Erosion and absorption of the supporting walls of the sinuses may be a true osteomyelitis and prove very troublesome, or it may admit of rupture and extension into the brain, resulting in meningitis or brain abscess. I have had one case, a young robust man, who, when recovering from an operated mastoid, was smitten with intense headache and supervening loss of consciousness. A Richmond specialist was called in consultation. We explored the mastoid field; he removed some cells which at the time of the operation were very sclerotic and apparently healthy, and which were allowed to remain; we also explored the dura and the brain. These showed no pathology and could not explain the alarming symptoms. A history had previously been taken of prior sinus infection following several attacks of grippe, or "flu", with headaches, marked depression even to threats of suicide, and nasal discharge. Ewing's sign and other evidences of frontal infection were positive and palpable when making the first examination. An autopsy could not be obtained, but from the nature of the onset and physical findings, the presumption was logical that the brain infection was a metastatic involvement from an old sinus empyema, which, under the stress of a mastoid operation, flared into flame.

The non-suppurating, sometimes called hyperplastic, types are of interest because of one complication which is not at all infrequent, —partial or total blindness which clears up completely, as a rule, if early diagnosis and prompt and efficient treatment are available.

These cases range all the way from "a skim over the eyes," as they express it, to complete loss of vision, particularly of central vision.

A study of the proximity of the canalis opticus to the most posterior ethmoid cell and to the bony wall of the sphenoidal sinus, will suggest the easy possibility of optic nerve infection and a post-optic neuritis. The bony walls here are sometimes papyraceous and, indeed, may present a dehiscence in the cell wall. This possibility is favored by hypertrophied superior and middle turbinates, which more or less obliterate the superior and middle meatus, thus interrupting drainage and aeration of the posterior ethmoid labyrinth and the sphenoidal sinus.

Leon White, of Boston, in studying these ocular cases, was first aroused by the consistency with which he had noted in his records a thickened and impacted middle turbinate, but an otherwise apparently normal nose. In most cases, probably 90 per cent of them, *there was no pus*. This is a very important fact to keep in mind in all nose examinations leading to a diagnosis of ocular and other obscure head symptoms.

14 *Marshall Street.*

CIRCULATORY ADAPTATION TO MUSCULAR EXERTION.

By C. C. HASKELL, M. D., Richmond, Va.

It is axiomatic that an increase in the activity of the striated muscles calls for an increase in the supply of oxygen to them: indeed, it has

recently been shown that the oxygen absorption of man may rise thirteen-fold as a result of violent muscular exertion. Since it is only through the blood that appreciable amounts of oxygen can be transported to the muscles, it is obvious that a change must take place in the circulation to meet this demand for an increased oxygen supply. The ways in which this adaptation is effected are to be sought chiefly in altered activity of the heart and in the state of the blood vessels; and the coordination manifested between these two factors, as well as with other influences constitutes one of the most beautifully adjusted physiological mechanisms with which we are acquainted. Because of this, an attempt will be made to review the explanations that have been offered for the cardiac and vascular changes that result from increased muscular exertion.

An increase in heart rate accompanying muscular exertion is a matter of common observation; it is obvious that this increase alone, other conditions in the circulation remaining unaltered, would suffice to increase blood flow. Most of us, from subjective experience, are inclined to believe that the force of the individual beats likewise is augmented. Attention will first be directed briefly to the manner in which heart rate is increased in muscular exertion.

As is well known, the heart is supplied with extrinsic nerves which exert quite different influences on this organ: in the vagi are carried inhibitory fibers; in the true sympathetic, the so-called accelerator or augmentor. Certain of the metabolic products of muscular activity tend to cause relaxation of the arterioles; consequently, a fall in arterial pressure would occur from the uncomplicated influence of an increase of these substances, which would result from increased activity of the muscles. The older view was that this reduction of arterial pressure stimulated tht endings of the depressor nerve in the left ventricle and aortic arch, setting up an impulse which was transmitted to the inhibitory center, and resulting in a depression of the cells of this center and a consequent acceleration of the heart rate. By an ingenious experiment, Starling has shown, however, that the center is affected directly; a rise of pressure in the vessels of the medulla serving to slow the heart, although there was no rise in the pressure within the ventricle or aorta, and a fall leading to the opposite effect.

Even more effective than a fall of arterial pressure in bringing about cardiac acceleration is a rise of venous pressure. Here, also, the influence is indirect,—in this case, truly a reflex one. Through undetermined nerve pathways, impulses are transmitted from the right heart to the medulla, where they probably exert an influence chiefly toward depression of the inhibitory center, though a reflex through the sympathetic supply cannot be ruled out. In this connection, it is of interest to observe the influence of "extra-circulatory" factors in bringing about the increased venous flow. The contracting skeletal muscles tend to "milk" the blood heart-wards in the veins, regurgitation being prevented by the valves present in these vessels, while, no less important, is the influence of the increased respiration. Each inspiration, lowering the intrathoracic and raising the intraabdominal pressure, forces the blood through the thin-walled veins toward the heart, thus bringing about an effective rise of venous pressure earlier than could be accomplished by the distant striated muscles.

The nervous mechanism is not alone concerned in cardiac acceleration. The rise of temperature, produced by the increased oxidation taking place in the body, is certainly an effective factor, and it is not unlikely that epinephrine may also be concerned in bringing about this effect.

That an increase merely in the rate of the heart is insufficient to supply the increased need of the contracting muscles for oxygen may readily be shown. Thus, in a reported experiment, to meet a four-fold increase in oxygen consumption, there occurred an increase of pulse rate of only 2½ times. The simplest explanation to account for this difference is that the amplitude of the cardiac contractions is likewise increased,—an explanation in harmony with our subjective experience and one that is now accepted by most physiologists, though the opposite view has been ably defended by Yandell Henderson. While it is difficult to secure positive evidence as to whether or not the stroke volume of the heart is ever increased under normal conditions, the general trend of recent investigation, as illustrated strikingly in the careful experiments of Marshall on the dog, practically convinces one that even moderate muscular exertion definitely increases the amount of blood discharged at each ventricular systole.

Accepting the view that the stroke volume of the heart is adjustable to meet varying de-

mands, one naturally turns to the extrinsic innervation in seeking an explanation as to the manner in which it is brought about, since we have seen the important role played by nervous impulses in effecting changes in cardiac rate. It has been conclusively shown, however, that the chief factor in bringing about alterations in the systolic discharge of the heart lies within that structure itself,—as Starling expresses it: ". . . a heart isolated from the central nervous system and from the rest of the body . . . has a marvelous power of adaptation, i. e., of regulating its activity according to the mechanical demands which are made upon it." Making use of the heart-lung preparation, in which it is possible to vary the arterial and venous pressures independently and to secure accurate measurements of the ventricular output, the surprising fact has been discovered that an increase in the peripheral resistance amounting to as much as 100 per cent has practically no influence, save of a most temporary nature, on the systolic output of the ventricles; that is, if a heart receive its venous inflow at a constant rate, "it makes no difference to the output of the heart whether the average arterial pressure, and, therefore, the resistance to the outflow of the blood be maintained at 80 or 160 mm. Hg, although, in the latter case, the heart must do exactly twice as much work in order to keep the outflow at the same level." (Starling.) On the other hand, if the arterial pressure is kept constant and the rate of venous flow is increased, the output at each ventricular contraction almost immediately increases to care for the increased rate of venous flow, and Starling and his co-workers have shown that in this way the minute volume of the heart may be increased ten-fold. This response, they found, was due to a property possessed not only by cardiac but skeletal muscle as well, namely, the power to increase the force of contraction in proportion to the extent to which the fibers are stretched during relaxation. As we have seen, in muscular activity there are several influences at play to accelerate the venous blood-flow; consequently, as a result of this increased flow, the ventricles become more widely distended in diastole and the succeeding contraction increases in force sufficiently to discharge the increased volume of blood within the chamber. Wiggers has recently pointed out that the stretching factor alone is not sufficient to explain the following increase in power of contraction; the degree of tension developed in the muscle must also be taken into consideration. Obviously, under the conditions existing in the intact animal, an increase in the rate of the venous return to the heart will not only stretch the muscle fiber to a greater length, but will also cause an increase in the degree of diastolic intraventricular tension or pressure. The importance of this influence of increased tension is obvious in connection with cardiac failure: if the diseased heart muscle has lost tonicity to a considerable degree, it may be readily stretched to a length as great or greater than is the case with the normal muscle, but the intraventricular rise in pressure would not be correspondingly increased; consequently, the stimulating influence of the tension factor would be less under this pathological condition of the muscle.

Important as is the role of the heart in effecting circulatory readjustments, that of the vessels is just as essential. Through the vasomotor system, the caliber of arterioles in certain large areas of the body may be quickly and markedly altered, with the result that not only is the peripheral resistance changed, and, consequently, the general arterial pressure, but the distribution of the blood may be very definitely affected. Because of the presence of a well-developed muscular coat of the arteries and the demonstration of the existence of a connection between this contractile tissue and the central nervous system, for years it was felt that through alterations of the caliber of the arteries alone, the vascular readjustments of the circulatory apparatus were chiefly or entirely accomplished. Without doubt, the influence of the arteries is an important one, but of recent years, more and more significance is being attached to the part played by the capillaries.

On account of the minute size of the individual capillary, we often overlook the enormous capacity of the capillary bed. It has been very conservatively estimated that the total cross section area of the capillaries is 400 times greater than that of the aorta. Krogh, from actual counts, concludes that there are no less than 2,000 of these little vessels in an area of a guinea-pig's muscles no larger than that of the average pin on cross section. He estimates that the surface area of the capillaries in a medium sized man reaches the enormous figure of over 6,000 square *meters;* and that a single cubic centimeter of blood in passing through

the capillaries may develop an effective surface area of over 7,000 square centimeters. According to him, if it were possible to dissect out all the capillaries from such an individual and place them end to end, they would stretch around the globe 2½ times. It is obvious that marked changes in many capillaries may lead to most pronounced effects on the circulation. That such alterations in size do occur has been shown by observations carried out on contracting muscle, where it is found that the number of visible capillaries may increase more than four-fold. Interesting observations have been carried out on the living kidney by Richards, from which it appears that the capillaries of this organ manifest contractility to a high degree. According to the older descriptions, the wall of the capillary consists of a single layer of endothelial cells; and it was difficult to conceive of this as representing an effective form of contractile tissue. Vimtrup has re-discovered certain peculiar cells, originally described by Rouget, and attributes to them the power of diminishing or increasing the capillary lumen. These Rouget cells send out long processes, which surround the capillary wall almost as a hand would, and it is readily apparent how a contraction of these processes would diminish the lumen of the vessel.

Sympathetic fibers run in close relation to the capillaries; and experimental proof that stimulation of certain sympathetic trunks will cause constriction of the capillaries in particular regions has been abundantly secured; a dilatation, following section of the sympathetic supply has not been so satisfactorily demonstrated. Burn has discovered that there exists an efferent supply to the capillaries running in the dorsal nerve roots; and he explains the well-known trophic disturbances that may follow section or destruction of sensory nerve fibers as the result of extreme dilatation of the capillaries involved. Apparently, there exists a peripheral nervous structure, by means of which the capillary lumen may be varied, as illustrated in the so-called axon reflex.

It is not only through nerve impulses that the capillaries can be affected; chemical substances influence them also. In the human subject, epinephrine causes constriction; extracts from the pituitary gland were much more effective. Contrary to the usually accepted view, it appears that lack of oxygen is the essential feature in causing a dilatation of the muscle capillaries during contraction of the muscles rather than the development of "acid metabolites."

Even so far as the investigations have been carried, and those most familiar with them are quickest to proclaim their incomplete nature, it is apparent that a most complicated mechanism exists for regulation of capillary caliber and, consequently, flow. The behavior of these vessels in response to varying needs for blood in the muscles is, obviously, of the utmost importance, as well as the changes which they may undergo in certain pathological states.

In the familiar circulatory readjustment brought about merely as a result of the increased need for oxygen in muscular exertion, it is seen, therefore, that a most complicated mechanism is involved. The increase in the output of blood is brought about through a two-fold change in cardiac activity; in part, depending on the influence of the central nervous system; in part, the result of certain inherent properties of the cardiac muscle. No less complicated is the control of the vessels; here, also, both extrinsic and intrinsic factors are concerned. When we attempt to analyze the circulatory changes brought about in response to even such a commonplace influence as increased muscular activity, one cannot fail to be impressed by the need for perfect coordination between the several factors involved, and we are led to wonder, not why disturbances in the circulation occur as the result of disease, but rather how this function may be satisfactorily carried out over many years.

THE PROBLEM OF ECTOPIC PREGNANCY.*

By GEORGE H. REESE, M. D., Petersburg, Va.

Ectopic pregnancy in its strictest sense means a pregnancy outside of the uterus. From a practical standpoint one is seldom called upon to consider any but the tubal form. This, however, like Cleopatra's charms, presents an "infinite variety" of sypmtoms and pathology to perplex the mind and tax the resources of either the scientist, or practitioner.

These problems begin with the etiology, and are often manifest throughout the uncertain period of gestation, even when the diagnosis is no longer in doubt, cropping up to sow

*Read before the Southside Virginia Medical Association at City Point, March 8, 1927.

the seeds of discord into any prospective therapy.

Ectopic pregnancy is not confined to human beings. It is also found in many of the lower animals,—the ape, cow, bitch and hare affording examples.

What, then, causes this unusual form of pregnancy? At the very outset we are confronted with a multitude of alleged reasons—all speculative, all probable, and all doubtlessly potent in particular cases.

According to Dr. de Lee first in importance perhaps is "salpingitis, gonorrhoeal or puerperal; second pelvic adhesions; third, infantile tubes with lack of cilia; fourth, wandering of the ovum; fifth, diverticula or accessory tubes; sixth, decidual reaction of the tube; seventh, disease of the corpus luteum."

Salpingitis is thought to act, either by destroying the cilia, or by glueing together the lumen of tube, forming constrictions or blind pouches, by which the ovum is prematurely arrested. Pelvic adhesions also act by kinking or narrowing the tube, and attain the same result. Infantile tubes are much convoluted, are deficient in cilia, and weak in propelling power.

In cases of wandering ovum, it may have grown so large as to be unable to pass the tube.

These are the major speculations regarding the etiology of this disease. As stated above, tubal pregnancy is, from a practical standpoint, the only one to be considered. Ovarian pregnancy has been demonstrated a number of times; but the reported cases are rare in comparison to the tubal form. Primary abdominal pregnancy is to be regarded as improbable.

In whatever part of the tube the ovum locates, the course is largely the same. It either forms a mole, or grows until it results in a tubal or uterine abortion, or ruptures through the tube into the abdominal cavity, or, more rarely, into the broad ligament.

In these cases the fate of the ovum chiefly depends upon the point of rupture, and whether or not the membranes are disrupted by the abortion.

If the membrane remains intact, the ovum may continue to grow, either in the uterus, broad ligament, or abdominal cavity.

When, by tubal abortion or rupture, blood is poured into the abdominal cavity, sooner or later it clots. It also irritates the peritoneum, causing an outpouring of fibrin, resulting in an early encapsulation of the clot by binding together the surrounding viscera.

Repeated hemorrhages may rupture these new formed adhesions, and the process be repeated until the patient is either relieved, or else dies of shock and hemorrhage. When the rupture occurs into the broad ligament, this structure may be the site of a large hematoma, or, at times, of foetal development.

In tubal abortion the embryo and clots undergo absorption by ferment and leucocytic action, which, as a rule, takes place within a few weeks.

In rupture, if the placenta is detached, or badly disorganized by hemorrhage, the foetus dies; and unless advanced beyond the eighth week, the little body is absorbed just as in tubal abortion, and in either case, without operation, the true condition may never be known. This is perhaps the sequel to many a tubal abortion.

On the other hand, if the child escapes alive, it may continue to grow in its original sac, or in a new sac formed of its surroundings.

After rupture, the placenta spreads from its original attachment, over the adjacent viscera. It is quite like a normal placenta, except that it is unusually thin. The blood vessels near the placenta are greatly dilated and friable, and new ones appear, especially when the omentum comes in to help nourish the placenta.

Again, but rarely, the tube or ovary may not rupture, but continue to expand with the growing ovum, forming a large sac, which adheres to all surrounding structures.

These secondary abdominal pregnancies may go to term, and a spurious labor set in, with a slight hemorrhage and a discharge of the decidua from the uterus. The child may die at this time, or live to a later period.

When left to itself, if the mother does not die of peritonitis, the child undergoes absorption of the soft parts, and later the skeleton may be extruded through a fistulous opening into some adjacent viscera. Otherwise the child may undergo mummification or calcification, and becoming encapsulated, be carried for years. Combined intra- and extra-uterine pregnancy has been frequently reported. Not unknown is double tubal preg-

nancy. Double gestation sacs have been found in one tube, and twins or even triplets in one sac are reported.

The course of ectopic pregnancy from a clinical standpoint is not uneventful. Rarely do the first few weeks or months pass without definite pelvic symptoms. These vary in type and degree almost without limit. There are few pelvic conditions that have not been confused with ectopic pregnancy, ruptured or unruptured, and *vice versa*. It is practically impossible to make a definite diagnosis of tubal pregnancy before rupture, or beginning abortion, and notoriously difficult at times after either of these events has taken place.

The usual history of these cases is a missed period, pain in the lower abdomen, usually on the affected side, faintness, nausea, with the usual symptoms of shock. The decidua may pass from the uterus as a whole, or in part.

Sometimes the effect of tubal rupture is terrific. The pain is sudden and excruciating, and soon spreads all over the abdomen. The patient utterly collapses, with all the evidence of acute shock and hemorrhage.

That a great deal of this prostration is due in many cases to shock alone is often proved at operation, there being not enough blood present to account for the depression on any hemorrhagic basis. The patient is deathly pale, slightly cyanotic about the lips, with a rapid feeble pulse, low blood-pressure, sighing, yawning, or gasping for breath. Later, they complain of thirst, become jaundiced from absorption of disintegrating blood, while the temperature proceeds to mount.

A blood examination often reveals a high polymorphonuclear count, as well as a very high total white cell count. In severe hemorrhage the hemoglobin, of course, is low, and the red cell count is low.

In the writer's opinion, the missed period, unilateral pain with or without uterine hemorrhage, excessive tenderness in the affected side, high white cell count with low hemoglobin, constitute the main diagnostic points in ectopic pregnancy.

Some of the highest white cell counts the writer has ever met with have been in ruptured ectopics; and in none of them was there any visible evidence of suppuration. In my experience the blood count has been higher, the tenderness greater, and the hemoglobin lower, in the average case of ruptured ectopic, than in the average case of salpingitis—with which it is likely to be confused.

The treatment of ectopic pregnancy, ruptured or unruptured, is operative. In view of all available statistics, the possibility of carrying a secondary abdominal pregnancy to term and of securing a safe delivery of a normal child is too remote for routine procedure.

In certain cases it might be considered and attempted; but it should never be the rule, for, when viable, the majority of these children are deformed and the danger to the mother prohibitive. Nor is it necessary in a rupture to rush the patient into an immediate operation, regardless of shock, or the probability of adding thereto. It is true that about 5 per cent of these cases refuse to rally from their primal shock, and no one can tell what any individual case may do; yet an overwhelming majority do rally, and rally repeatedly, and this unquestioned and amply demonstrated fact should be borne in mind and duly weighed when considering emergency measures. To the writer's mind, there is no more atrocious surgical act than an operation on a patient in a state of acute shock, unless absolutely unavoidable. In these cases the statistics are overwhelmingly against ill considered and precipitate action. Fifty per cent of these cases die when operated on in acute shock. Operate by all means, but do it in such a manner as not to further jeopardize a patient already in a critical state.

As stated above, a great deal of this prostration is due to the pain from peritoneal irritation, caused by the rupture and extravasated blood of limited amount. In such cases the entire picture may be changed by a single injection of morphine, to the great relief of all concerned.

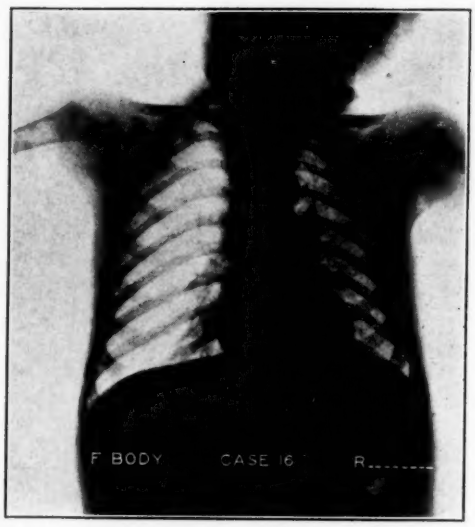
The writer has had in the past four years fifteen of these cases; fourteen of them were ruptures or abortions, several of them having been rupturtd for months. In not one of these did there appear more than a moderate amount of prostration when seen by him; but most of them gave the usual history of partial or complete collapse at the outset of rupture. All of these cases were operated upon successfully by the writer, and are a minor testimonial in keeping with the mass of evidence that these cases need not be rushed

through an operation in order to secure a favorable result.

FOREIGN BODIES IN THE AIR AND FOOD PASSAGES—CASE REPORTS

By E. G. GILL, M. D., Roanoke, Va.

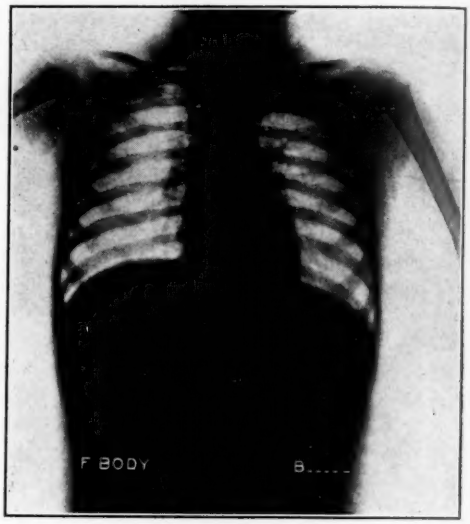
CASE 1.—Patient, D. B., female, age two and one-half years, was referred to us March 15, 1927, by Dr. C. B. Bowyer, who gave the history of the case and the X-ray plate showing a metallic substance in the cervical esophagus. The child had been unable to swallow anything except fluids for the past four days. Coughing and gagging had been



a frequent symptom. The child-size esophageal speculum was introduced and the coin (a nickel) was easily seen just above the cricopharyngeal fold. Alligator rotation forceps were used for extraction. The dysphagia and cough was immediately relieved.

CASE 2.—Patient, T. R., male, age three years, was referred to us by Dr. S. P. Conduff March 14, 1927. History as follows: Five days ago child strangled while eating corn. Has had coughing spells and a "wheezy" sound in throat and chest since the accident. Temperature 100°, pulse 140, respiration 48 on admission. Urinalysis negative except trace of acetone. Blood picture: W. B. C. 6,000; haemoglobin 65 per cent; polynuclears 59; lymphocytes 40.

Physical examination: nose and throat negative. There was limitation of chest expansion and diminished breath sounds on the right side. X-ray examination of chest did not reveal the presence of a foreign body. The history of foreign body aspiration together with the physical findings were sufficient indication for a bronchoscopic examination. The 5 m.m. bronchoscope was introduced. The mucous membrane of the larynx,

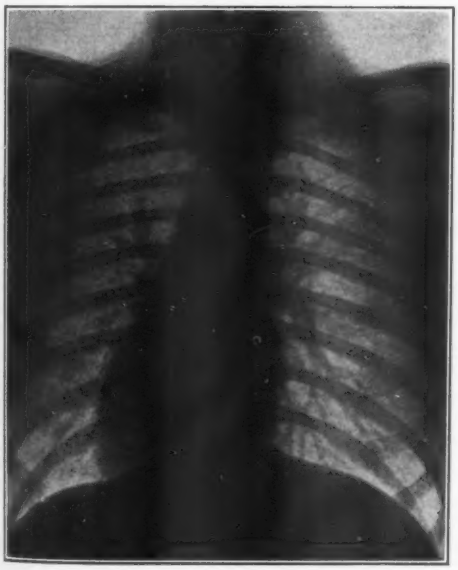


trachea and bronchus was intensely inflamed. A considerable amount of muco-purulent secretion was aspirated. After the removal of the secretions, a portion of a partially masticated grain of corn was seen in the right main bronchus. The corn was removed in four pieces. The following day the patient began to show signs of air hunger—indrawing around the clavicles and intercostal spaces, and restlessness. A tracheotomy relieved this condition. The tube was worn for ten days. During this time a large amount of muco-purulent material was coughed up and aspirated through the tube. Particles of corn were occasionally observed in the secretions. Aspiration of organic foreign bodies, such as grain of corn and peanuts, frequently produce a laryngo-tracheo-bronchitis and a tracheotomy early performed is often a life saving measure.

The radiograph of the chest in this case shows increased density over the entire right side, as the aeration has been cut off by the particle of corn which was impacted in the right main bronchus.

Case 3.—Patient, age fifteen, female, was referred to us May 30, 1927, by Dr. I. T. Hornbarger. *History* as follows: Patient

swallowed a twenty-five cent piece, May 29th. Patient now has pain on swallowing. *Physical examination*, nose, throat and chest was negative.



X-ray examination shows the coin lying in the esophagus between the third and fourth interspace anteriorly which corresponds to the fourth thoracic vertebra posteriorly. While the patient was on the X-ray table, a solution composed of 6 c.c. of lipiodol and 6 c.c. of olive oil was given by mouth. The lateral plate shows this mixture sticking to the coin.

Operation: With adult esophageal speculum, coin was located and removed with the alligator rotation forceps. Patient made an uneventful recovery and was discharged from the hospital the following day.

Foreign body, twenty-five cent piece.

Gill Memorial Eye, Ear and Throat Hospital, Department of Bronchoscopy.

PNEUMOCOCCIC PERITONITIS—REPORT OF TWO CASES.

By HERBERT C. JONES, M. D., Petersburg, Va.

Pneumococcic peritonitis is of interest to the pediatrician, internist, surgeon and laboratory worker. With the improvement of laboratory facilities and the development of hospital statistics with regards to the proper records, the incidence of this horrible catastrophe is gradually becoming known. Many cases are now being reported throughout the country and it seems rather appalling that this condition occurs so frequently. Many writers, as late as four or five years ago, questioned the fact that pneumococcus peritonitis occurs as a primary condition, and even now the Bureau of Vital Statistics questions such a diagnosis, because, on two occasions, the writer has been requested to give further information with regard to this diagnosis. Pneumococcus peritonitis may be either primary or secondary. It is classed as primary when no definite focus or portal of entry is known, and it is this type of case to which the writer has special reference.

Primary peritonitis is such an open question with regard to diagnosis and treatment that one is impressed with necessity of the profession reporting all such cases so that the proper methods of diagnosis and treatment may become general. It is only in this way that anything like a standard treatment can be developed, and the incidence of the disease established.

The following two cases are presented, not because of any success in their handling, since both died, but because of several interesting facts brought to mind by their observance.

CASE REPORTS.

Case 1.—Rosella B., age 7, was admitted to the Petersburg Hospital, December 20, 1924, at 6:30 P. M., crying with abdominal pain of 43 hours' duration.

Her *Family History* was as follows: Mother, father and five children living and well.

Past History:—Measles as baby; chickenpox when one year old. Has been healthy child.

Present Illness, 9 P. M., December 20, 1924:—This child was taken ill at 1 A. M., December 19, 1924, with a violent pain in her abdomen. She had gone to bed and was awakened by severe pain in the pit of her stomach. She was given castor-oil and paregoric by her mother, who said the child would cry out about every half hour with pain. She had vomited everything taken by mouth since she became ill. The pain yesterday was not so severe, the little girl sleeping most of the day. She was given calomel, one-half grain, but did not retain it. The pain was much more severe during last night. The pain has been paroxysmal since onset, and was most severe around the umbilicus. The child had several movements yesterday and today. The stools were green in color and showed no blood. There is no history of a coryza or naso-pharyngitis.

She was seen first an hour before admission to the hospital with all signs of an acute abdomen. Temperature 102, pulse 120.

Physical Examination:—Heart very weak; no murmurs; pulse 120.

Lungs.—Increased breath sounds in left back, especially over upper part of lower lobe. However, no rales were heard and there was no impairment.

Abdomen.—Rigid and tender all over, with possibly a little more tenderness over the lower right quadrant. Distention moderate. The general picture of the abdomen obscures the existence of a local condition. However, the appendix is most likely the seat of trouble.

White count—36,000; polys.—86%.

Provisional Diagnosis:—Ruptured appendix with general peritonitis.

The patient was taken to the operating room as soon as she could be prepared. Under ether anesthesia, a right rectus incision was made in the lower abdomen and the peritoneal cavity opened. The abdomen was full of thin white fluid, having no odor. The intestines were very red, but the appendix was normal in appearance. The intestines were only moderately distended. No diverticula or perforation were noted. There was no evidence to indicate the starting point of the infection. Two hemorrhagic spots were noted on the small gut. The appendix was removed in the usual way and a rubber-dam drain inserted at the lower end of the wound. The wound was closed by through and through silk-worm sutures. A smear made from the fluid showed an encapsulated diplococcus—probably pneumococcus.

12-21-24: Abdomen still very rigid and distended, draining freely. Temperature 104, pulse 140, volume good.

12-22-24: Condition about the same as yesterday—no nausea, distention moderate, temperature 103, pulse 140.

12-23-24: Child somewhat more quiet today. Temperature 105, pulse 140. Wound dressed, drains removed, very little drainage. Several movements today.

12-24-24: Child brighter, very little drainage, no distention, pulse 140, temperature 103.

12-25-24: Wound dressed, no drainage, abdomen slightly distended, slight nausea, temperature and pulse about same. No evidence of collections of pus to be noted.

12-26-24: 9 P. M.—Respirations very rapid, temperature 104, pulse 160, weaker. Marked nausea, very little distention. Specimen of urine was loaded with albumen and all forms of casts. Definitely worse. White count—8,000; polys.—88.

12-27-24: Child died this afternoon. The abdomen was then opened by enlarging the original incision. Findings:—General peritonitis; no evidence of perforation or diverticula. The intestinal tract from the cardiac end of the stomach to the rectum was removed and filled with water, but there was no leakage. Two hemorrhage spots, with no ulceration into the peritoneal cavity or in the lumen of the gut, were noted about one inch apart on a coil of small intestines. It was only after a very careful examination that it was decided to sign the death certificate—"Primary general peritonitis, probably pneumococci in character."

Pathological Report.—Reveals acute appendicitis superimposed on a chronic appendicitis. Acute inflammation seems to have invaded the appendix rather than to have originated in it.

The above case was given the usual perito-

nitis treatment, consisting of fluids under the skin and by bowel. Stimulation when indicated. Morphine for rest. She was also kept in extreme Fowler position.

Case 2—Ruth S., age 6, was admitted to Petersburg Hospital on January 3, 1926, at 5:30 P. M., with temperature 105 and a pulse which could not be counted.

Family History:—Negative.

Past History:—Had measles and chickenpox when four years old.

Chief Complaint:—Severe pain in the abdomen, with nausea, vomiting, and diarrhœa of 32 hours' duration.

Present History:—This child awoke yesterday morning, January 2, 1926, as well as ever. She went on an errand for her mother eight or ten blocks away and on returning was taken with a severe pain in her abdomen. This pain was most marked in the lower left quadrant. She appeared extremely ill from the onset and vomited many times. She also had many small fluid stools. In one of these there was a little fresh blood. The vomiting was projectile in character. Child grew rapidly worse and within four hours was delirious. She was admitted to the hospital thirty-two hours after onset. Her parents said her temperature was extremely high from onset. There was no history of a cold preceding this illness.

Physical Examination:—Throat showed no redness or evident signs of infection. Tonsils were moderately hypertrophied.

Heart:—Sounds weak, pulse 180, no murmurs.

Lungs:—Negative, no areas of rales, impairment, or increased breath sounds.

Abdomen:—Tense and rigid, touching abdomen at any point caused extreme pain, but it was most marked in the lower left quadrant. No masses were palpable; distention moderate.

Provisional Diagnosis:—General peritonitis, probably due to a ruptured appendix or diverticulum.

The child was immediately taken to the operating room and, under ether anaesthesia, a mid-line incision was made over the lower abdomen and the peritoneal cavity opened. The cavity was found filled with a mucopurulent fluid. Intestines were very red and moderately distended; however, there was no point of ulceration. The pelvis was filled with pus. Both tubes and ovaries were very red. Uterus infantile; duodenum and stomach were almost normal in appearance. A small hemorrhagic spot about the size of a dime was noted on the coil of small intestines. This spot seemed thicker than the rest of the intestine, but there was no point of perforation. No cause could be found for the general peritonitis present. Smear from pus showed diplococcus, which was probably a pneumococcus. A rubber tube drain was placed through the lower angle of the wound into the pelvis. 300 c.c. of warm saline were left in the abdomen. Closure was made by through and through sutures of silk worm. Patient's condition was possibly a little better than when she went on the table. However, her temperature and pulse rose and the child died five hours after operation.

Autopsy.—This autopsy was made because no cause for the general peritonitis present at the operation was found. Smears of the pus revealed the pneumococcus. The autopsy consisted of simply enlarging the abdominal incision. The stomach and duodenum were nearer normal in appearance than any of the other abdominal contents; more pus and plastic exudate were noted in the pelvis than any other portion of the cavity. The appendix showed only the same inflammation as was revealed by the other contents of the cavity. Ovaries, tubes and appendix were removed for examination; also a small area in the small intestines, which showed a questionable black spot, but no perforation. The esophagus was tied off and the stomach and all intestines removed down to and including the rectum. They were then distended with water, but no leakage was found. This examination revealed no definite portal of entry for the infection.

Pathological Report:—Specimen ovary, appendix, and lumen of the intestine. Ovary infantile; superficial ulceration of the bowel with an acute inflammation of the serous coat of the bowel.

Incidence.

The pneumococcus and hemolytic streptococcus are considered to be the offending organisms in primary peritonitis. Many writers seem to think that coryza or a naso-pharyngitis usually precedes a streptococcus or a pneumococcus peritonitis; others do not think this of any particular significance. One fact seems fairly constant throughout the literature, and that fact is that very rarely does a pneumo-

coccus peritonitis case show any signs of a pneumonia either by X-ray or by physical signs. Rolleston, in 4,400 cases of pneumonia, has only seen a peritoneal involvement in 11 cases and even this incidence seems higher than the experience of many other observers.

Streptococcic and pneumococcic peritonitis usually occur in children from infancy up to seven years. Rarely does the condition exist after the age of seven. In a recent report in the *Journal A. M. A.*, January 9, 1926, by Drs. Lipshutz and Lowenburg, of the Mt. Sinai Hospital, Philadelphia, an excellent resume of this subject was given. Of twenty-three cases reported over a period of three years, every case died in spite of the many procedures instituted in their care. The ages varied from 3 months to 6 years:—3 months, 2; 10 months, 4; 1 year, 6; 2 years, 8; 3 years, 1; 4 years, 1; 6 years, 1. Pneumococcus peritonitis occurs in girls 3-1, while in streptococcus peritonitis the incidence is about equal. This report of 23 cases of primary peritonitis occurring in one hospital in a period of 3 years is appalling and would indicate that possibly this condition exists more often than is generally thought. While this condition probably exists more frequently in children, it does occur in adults. Dr. Leonardo, in the March number of *Annals of Surgery*, reported 3 cases in adults, all of which died.

Assuming that the germ does not primarily involve the peritoneum, its transfer may occur in several ways:

1. *Blood Stream.*—Some consider peritonitis secondary, not to a single focus, but to a bacteremia. In support of this, 9 out of the 23 cases in the Philadelphia report showed positive cultures. Further consideration of the blood stream as a portal of entry will be taken up later.

2. *Lymphatic Route.*—If this is true, it varies with all known facts of pathology. The normal flow of lymph is in a contrary direction.

3. *Genital Tract.*—Pneumococcic peritonitis affects girls in the ratio of 3 to 1. In the Philadelphia reports, 8 of the 9 pneumococcic cases occurred in girls. Gonococcus and tubercular peritonitis are thought to occur in this way. Pneumococci and streptococci are passed through the bowels and a vaginal contamination may occur. The acid vaginia in women is thought to kill the pneumococcus. Pneumococcus peritonitis does occur more frequently in females. However, it does occur in males in many instances, and this weakens the theory of the genital tract as a portal of entry.

4. *Gastro-Intestinal.*—It is impossible to produce peritonitis by feeding the pneumococcus or the streptococcus through the mouth, unless there is a leakage in the gastro-intestinal tract.

Pathology

In the early stage, the exudate is limited to the pelvic peritoneum. Later, the inflammatory process spreads rapidly, and in 24 to 72 hours blossoms out into a diffuse purulent peritonitis.

Early the exudate is filmy, and only later it becomes sticky and purulent. Pneumococcic and streptococcic involvement of the peritoneum show practically no tendency to encapsulation. This is one reason drainage is so unsuccessful.

The intestines are red and swollen, but slightly distended.

W. B. C. are usually high, ranging from 25,000 to 40,000, with marked increase in polys.

In reading the literature, the writer was struck with the fact that all the autopsy records (5 in number), described one or more hemorrhagic spots as occurring in the serosa of the small intestine. Although these spots, which are probably infarcts, occur in other forms of peritonitis, it seems possible that they may be the starting point of this type of peritonitis. Certainly they are not seen in every case of peritonitis. The capillaries of the serosa are very small. Bacteria might easily lodge here and either penetrate or filter through into the peritoneal cavity. Also, I am informed that autopsies on pneumonia patients often show these petechial hemorrhages into the serosa of the small intestine. This would indicate that the peritoneum is able to take care of most of these small infarcts. If the process is one of penetration, it should be visible to the eye, either macro- or microscopically.

Autopsy of the second case was interesting because on the mucous surface of small intestine opposite the hemorrhagic spot, which was about the size of a dime; a superficial ulceration was noted. However, there was no evidence of penetration into the peritoneal cavity, and should the pneumococcus have entered in this manner, the process would have

been one of filtration. To the writer, then, it seems there may be two possible portals of entry as an explanation of so-called primary peritonitis,—first, through infarction and then penetration or filtration; second, through superficial ulceration in the bowel and then filtration into the peritoneal cavity.

Symptoms.

The onset is sudden, with high fever. A history of a cold seems obtainable in about 50% of the cases.

Diarrhœa is a constant symptom; however, it may be replaced by constipation.

Vomiting is a most common symptom. It is persistent and may be projectile.

Abdominal rigidity appears early. Pain and tenderness are always present.

The onset of temperature is sudden and remains high.

The evidence of toxicity does not appear early. The children usually are bright until the end.

The diagnosis may be confirmed by a peritoneal puncture. This seems to be a safe procedure. The diagnosis in all 23 of the Philadelphia cases was confirmed by this puncture with no serious difficulties.

The greatest difficulty in diagnosis seems to be in differentiating this form of peritonitis from that produced by a ruptured appendix or diverticulitis. However, the abrupt onset with high temperature, diarrhœa, extremely high leucocyte count, general tenderness and rigidity should be borne in mind, also, appendicitis is rare in infants under two years of age.

Treatment.

Early operation seems to be the only method of treatment; at least, practically all the cures have been obtained in this way. Suction of the peritoneal exudate followed by multiple drains seems to offer the most hope. Stab drains in the flanks should be made. Enterostomy will lessen distention and toxicity as a result of absorption of the intestinal contents. Fluids by the skin, vein, and bowel should be given. If enterostomy is done, the patient can take fluids by mouth; otherwise, it will increase distention. Stimulation should be given when indicated, and morphine is very necessary to keep the patient quiet.

Early operation is necessary to establish drainage as soon as possible and also to prevent error in diagnosis, such as perforation, diverticulitis, or a ruptured appendix. Lymphocostomy has been tried in vain in most instances. Costain has reported one cure in this manner, but there have been many failures. Mercurochrome, gentian violet, anti-pneumonic, anti-streptococcic serum and the typed pneumonia serums have all been tried and found wanting.

Prognosis.

The prognosis is poor at best. Certain factors, however, must have some influence, such as the virulence of the organism, the time of the operation, and the age of the patient. It is interesting to note the different results obtained by different men; however, one does not have the opportunity of studying out all such cases. All 23 of the Philadelphia cases reported from Mt. Sinai died; also, all of Dr. Leonardo's 3 cases died. Fraser and McCartney reported 42% mortality; Koennuke, 27 cases, 55% mortality; Rischbreth, 88% mortality in a London Hospital, and Rohr's series of 88 cases with 86% cured.

Summary.

1. All cases of so-called primary peritonitis should be reported so that the incidence of the disease and better diagnosis and standards of treatment may be established.

2. Peritoneal puncture is a great aid in diagnosis, and can be done with little chance of harm to the patient.

3. Cultures and smears should be made of all suspicious peritoneal fluids, and facilities for making them should be close at hand every time an abdomen is opened. A better prognosis can be made in this manner.

4. It seems very important to make autopsies in all forms of peritonitis, especially in those cases where the origin of the infection is unknown. It is easy to enlarge a scar and establish facts which might have been overlooked at the time of operation. Our knowledge of so-called primary peritonitis is going to be increased only in this manner.

431 *Washington Street.*

AGRANULOCYTIC ANGINA—WITH REPORT OF A CASE.*

By O. O. ASHWORTH, M. D., and E. C. MAPHIS, M. D., Richmond, Va.
(From the Medical Department of St. Elizabeth's Hospital).

Mrs. J. A. C., married woman, age 32, was admitted to St. Elizabeth's Hospital at 11:30 A. M., September 18, 1926.

*Read before the Richmond Academy of Medicine, February 22, 1927.

Past History: The patient had had a thorough physical examination six weeks prior to the present illness. Her chief complaints at that time were nervousness, lack of endurance, irritability and menorrhagia. The positive physical findings were pyorrhea alveolaris, evidence of right apical pulmonary fibrosis, retroversion of uterus with second degree prolapse, chronic cystic cervicitis and loss of weight. Laboratory examination showed the following: Blood: hemoglobin 60 per cent; R. B. C. 4,000,000; W. B. C. 3,500; coagulation time normal; Wassermann negative. Urine: 24 hour specimen normal. Stomach contents showed a normal acidity. A general program was outlined to improve the patient's living conditions with especial attention to rest and diet. Blaud pill, gr. x, t.i.d., p.c. and sodium cacodylate gr. v, q.o.d., were prescribed for the anemia. Luminal gr. ½ t.i.d. was given for nervousness. By this treatment she improved symptomatically and had gained six pounds prior to onset of the present illness.

Present Illness: Two days prior to admission to the hospital the patient had complained of general lassitude, chilly sensations and generalized joint pains. The positive findings from a complete physical examination at that time were as follows: Moderate injection of posterior pharynx with tonsils normal, slight fibrosis at right pulmonary apex, pyorrhea alveolaris, and an appearance of secondary anemia. The temperature was 101° F., pulse 100, respirations 20. A tentative diagnosis of influenza was made on the basis of the acute symptoms, and the usual treatment for this disease was instituted. This consisted of rest in bed, forcing fluids, small doses of salicylates and throat gargles. The patient was seen upon the following day when her pulse, temperature and respirations were essentally the same and there were no additional symptoms. Her pharnyx showed more congestion with considerable edema of the soft palate and surrounding tissues. A dark grayish ulcer was noticed on the left tonsil. The superficial necrotic area could be wiped away and was not followed by bleeding. At six o'clock the following morning the patient was seen for the third time. She appeared extremely toxic with a pinched expression about the face. The skin and mucous membranes were slightly cyanotic. The only additional subjective symptom was intense pain in the throat, which was not relieved by oral administration of two grains of codein sulphate. The throat picture was essentially the same, except the edema seemed more marked and an additional ulcer was on the opposite tonsil.

On admission to the hospital six hours later, there was the same toxic appearance, the features were drawn, pupils dilated, and the eyes semed to protrude with an expression of apprehension. The skin and mucous surfaces were definitely cyanotic. There was no icterus. Objectively, dyspnoea was the most marked sign present. A suggestive inspiratory crow was noted, but she could talk. The throat showed still more generalized hyperemia and edema, and the ulcers had increased in size. The throat was so immobile that she could not gargle. The temperature was 103° F., pulse 118 and slightly irregular, and respirations were 36.

Laboratory examination showed: Blood: hemoglobin 60 per cent; R. B. C. 4,000,000; W. B. C. 160; differential count, large lymphocytes 40 per cent, small lymphocytes 25 per cent, polymorphonuclears 22 per cent, transitionals 2 per cent, eosinophile 2 per cent, basophile 3 per cent, and myelocytes 5 per cent. The blood examination was checked by two internes and the laboratory technician. A smear from the pharynx and tonsils showed many spirochetes and fusiform bacilli, rare long chain streptococci, many staphylococci and many cocci occurring in pairs. A culture was made for diphtheria, which proved negative. Other cultures were examined by the Virginia State Board of Health and reported negative. The blood Wassermann was negative. Blood culture was negative.

Throughout the day the patient received 1,000 c.c. of normal saline by hypodermoclysis and was treated symptomatically with opiates, strophanthin, adrenalin chloride and caffein sodio-benzoate. Forty thousand units of diphtheria antitoxin was administered in two doses. No anaphylaxis followed either injection. Dyspnoea became progressively more marked, but at all times it was possible for the patient to reply to questions distinctly. About 6:45 o'clock in the evening muscle twitching began in the upper extremities and a little later in the lower extremities. Respiration became very difficult, shallower and slower and cyanosis more marked. Twenty minutes later breathing ceased.

A diagnosis of agranulocytic angina was made.

Comment

Occurrence: Lovett states that this disease is rare or unrecognized in the United States, and he is accredited with reporting the first case in 1924.[1] Prior to this time a dozen cases had been described in Germany.[2] So far, only women of middle age have been affected. Since Lovett's report, Skiles,[3] Pelnar,[4] Moore and Wieder[5] and Lanter[6] have reported similar cases.

Etiology: No causative factor has been isolated. Lovett suspects the bacillus pyocyaneus.[1] Moore and Wieder found only Vincent's organisms from throat smears. Skiles thinks the mechanism of the production of the condition may be due to either one of two factors: a specific infection resulting in local necrosis with the formation of a specific toxin for the bone marrow, or a primary affection of the bone marrow resulting in an inhibition of the granulocytic formation, due to lowering of the resistance of the patient.

Morbid Anatomy: The main features seem to be ulcerative angina and a great reduction in leukocytes, affecting chiefly the granulocytic series. The onset and course are acute, and the outcome is fatal. The characteristic lesions are dirty, ragged, yellowish, rapidly spreading ulcers, which may occur on the tonsils, pharynx, gums, tongue, larynx and genitalia. In a case reported in Germany by Petri,[7] typical necrotic lesions were found throughout the gastro-intestinal tract. The most characteristic lesion is in the bone marrow,[8] which shows an entire absence or greatly diminished number of granulocytes and their precursors, while the lymphoid and red cell elements are slightly if at all reduced.

Symptoms: There is a sudden onset with throat, neck and joint pain, high fever and normal organic findings except for those previously mentioned. Icterus has been reported in some cases. Headache is common. Cardiac disturbances are reported to be rare.

Laboratory Findings: A diagnosis of agranulocytic angina cannot be made without the lowered leukocyte count. The polymorphonuclear element is always greatly reduced. Moore and Wieder's case showed only 5 per cent of the granulocytic series. Bacteriological findings are variable, Vincent's organisms being found in the majority of cases.

Treatment: Nearly all cases have a fatal outcome. Local treatment of the throat seems to be a matter of choice with the attending physician. Intravenous arsphenamine, tartar emetic and diphtheria antitoxin have been used.

Discussion: In comparing the findings in the case cited above with those in the experience of other observers, several intersting facts are noted. Perhaps the most significant is the patient's white cell count of 3,500 six weeks prior to the fatal illness. From this alone it seems probable that Skiles' supposition that the disease is due to a specific bone marrow deficiency, caused in turn by lowered resistance, contains much truth. It would appear from laboratory findings and the patient's general ill health, with loss of weight, that the disease had been in progress for some time. Possibly this would also offer an explanation for the Moore and Wieder's case which recovered from a primary attack and succumbed to a second attack. It certainly appears that the disease ran a chronic course, even though the patient seemed to improve somewhat prior to the fatal outcome. Another interesting fact is the remarkably low white cell count, which, as far as can be determined, is the lowest on record in the reported cases of this disease.

Bibliography.

1. Lovett, B. R.: Agranulocytic Angina. *Jour. Am. Med. Asso.*, 1924, 83:1499.
2. Bantz, R.: Agranulocytic Angina; Leukemic Conditions with Extreme Leukopenia. *Med. Klinik.*, 1923, 19:1667:
2. Bantz, R.: Agranulocytosis, *Munch Med. Wchnschr.*, 72:1200, 1925.
2. Friedmann, Ulrich: Angina Agranulocytotica. *Med. Klinik.*, 1923, 19:1357.
3. Skiles, J. H.: Agranulocytic Angnia. *Jour. Am. Med. Asso.*, 1925, 84:364.
4. Pelnar: Malignant Leukopenia. *Cas Lek. Cesk.*, 1924, 63:1653. Ab. in *Jour. Am. Med. Asso.*, 1925, 84:74.
5. Moore, J. A., and Wieder, H. S.: Agranulocytic Angina: Report of Case with Two Attacks. *Jour. Am. Med. Asso.*, 1925, 85:512.
6. Lanter: Agranulocytosis with Septic Tonsillitis. *Med. Klinik.*, 1924, 20:1324. Ab. in *Jour. Am. Med. Asso.*, 1924, 83:1466.
7. Petri, E.: Grace Changes of the Whole Digestive System in So-called Agranulocytosis. *Deutsche Med. Wchnschr.*, 1924, 50:1017; Ab. in *Jour. Am. Med. Asso.*, 1924, 83:798.
8. Piette, E. C.: The Histopathology of Agranulocytic Angina. *Jour. Am. Med. Asso.*, 1925. 84:1415.

312 *Medical Arts Building.*

THE ROLE OF THE SURGICAL PATHOLOGIST.

By REGENA BECK, A. M., M. D., Richmond, Va.
Pathologist to Stuart Circle Hospital.

As Director of Laboratories and Surgical Pathologist at Stuart Circle Hospital, I have been asked so frequently the same group of

questions concerning the role of the surgical pathologist and the scope of his function that it has seemed worth while to present these questions in the form of a paper attempting an exposition of this matter, making clear the possibilities of and necessity for surgical pathology in the practice of modern surgery.

Question I.—What, in brief, is the function of the surgical pathologist?

Answer.—To be present at all operations, giving, when required, expert advice concerning gross pathological appearance and suggesting areas suitable for biopsy. When there is a doubt concerning the diagnosis and, therefore, the surgical procedure, to immediately section the frozen fresh tissue and return a microscopic pathological diagnosis in an average time of five minutes. When an immediate report is not required, all specimens from the operating room are examined while fresh and a report given to the surgeon while the patient is under his care.

Question II.—Cannot the surgeon at exploration make an adequate gross diagnosis and proceed on this?

Answer. — MacCarty[1], who has compiled more statistics on this subject than anyone else, says that, in his experience with 150,000 surgical specimens, 42,000 of which were studied in relation to gross diagnosis, he found that gross, positive diagnosis was physically impossible in 18 per cent. The microscope was absolutely essential in this 18 per cent. This percentage of impossible diagnoses varies, of course, with different parts of the body.

If a pathologist of such wide experience as MacCarty fails in gross diagnosis in 18 per cent of cases, certainly the percentage of error would be much higher for surgeons who are not devoting their entire time to gross and microscopic diagnosis of fresh tissue. It would, therefore, appear that surgeons proceeding with an operation on their own gross diagnosis, certainly in this 18 per cent of cases, are faced with two possibilities:

1. An unnecessary radical, or
2. An incomplete operation.

MacCarty also states that 5.7 per cent of all surgical cases at the Mayo Clinic which produce surgical specimens have tissue removed for diagnosis during operation, i. e., 5.7 per cent could not be diagnosed before operation. He also states that 2.65 per cent of all surgical patients who produce surgical specimens have pathologically incorrect clinical preoperative diagnoses. Of these 2.65 per cent, 60 per cent required a radically different surgical procedure as a result of the microscopic study.

In a series of breast cases at the Mayo Clinic,[1] well trained surgical clinicians who examined these breasts indicated their inability by the usual clinical methods to make positive pathological diagnoses in 21.5 per cent. The microscope was absolutely necessary in this 21.5 per cent. In the remaining breast cases, 4.5 per cent of those diagnosed as malignant turned out to be benign on microscopic study. If, then, upon a clinical diagnosis of supposed malignancy, some surgeon had proceeded with a radical operation, then 5 out of every 100 women would have received radical operations unnecessarily.

A similar study to show percentages in the diagnosis of uterine conditions would, no doubt, be as interesting, for it is often impossible to differentiate clinically malignancy from other conditions, such as polyps, placental remnants, fibromyomas, adenomyomas, sclerosis and para-uterine lesions. If conservative surgeons do not wish to remove the uterus and its appendages unnecessarily they must have a microscopic diagnosis before proceeding. Uterine curettings can be studied by the fresh frozen section method, and when cancer cells are found the surgeon then knows which procedure is best. A negative report in this type of case is not conclusive, however, because of the possibility that the curette has not removed the carcinomatous tissue in small lesions, especially if they are in the fundus or a horn of the uterus.

An old surgical slogan has been, "When in doubt, do a radical". This was permissible twenty-five years ago, but today the surgeon is under moral obligation to his patient to provide adequate means for rapid microscopic diagnosis, so that, the doubt being removed, a radical operation may be limited to those cases where it is indicated. The modern slogan is, "When in doubt, explore and have expert diganosis on the fresh tissue".

Question III.—What tissues can be sectioned and diagnosed by the fresh tissue method, and how much tissue is needed?

Answer.—Practically all tissues can be sectioned and diagnosed by this method; in fact, all surgical specimens, even bits of tissue as small as 2 millimeters or less (1/25 of an

inch) may be frozen and sectioned in this way. L. B. Wilson[2-3] described the method of preparation of fresh tissue for study during operations in 1905, using the freezing microtome and a polychrome stain.

Question IV.—Can fresh frozen sections be cut as thin as imbedded sections?

Answer.—For rapid work on fresh tissue, sections are usually cut 10 microns thick. This is the average diameter of most tissue cells. When the cells in fresh tissue are cut in twain, the uncoagulated protoplasm flows out, so that only the intact cells remain. Thus, a well-made section is one layer of cells thick, and surely the embedded sections can offer no improvement over that.

Question V.—How much time is required to prepare and diagnose a tissue by this method?

Answer.—Five minutes is about the average time.

Question VI.—What is the method used to make these frozen sections?

Answer.—As soon as the tissue is removed from the patient, a block is frozen with carbon dioxide gas, a section cut with the microtome and floated in isotonic NaCl solution. The section is then dipped in Terry's modification of Unna's polychrome stain for a period of from ten to twenty seconds. It is then rinsed in isotonic NaCl solution, floated on fresh isotonic NaCl solution, and mounted from this last on a slide. A cover glass is dropped on and the section is ready for microscopic study.

Question VII.—Is there any difference in the microscopic appearance of fresh tissue and fixed tissue?

Answer.—The study of fresh tissue is a specialty in itself and the interpretation of this stain requires considerable experience, but after it is once mastered, it is found to be as satisfactory as the hematoxylin-eosin combination, the differentiations being just as great to the experienced eye. The cells of fresh tissue are quite different structurally from those which have been dead for some time or have been fixed and embedded. Fixing coagulates the protoplasm and of necessity brings about great changes in the cell structure. Therefore, one accustomed to making diagnoses from fixed tissues must have special training before he can interpret a fresh tissue slide. The cells in the fresh tissue are larger; fixing shrinks and distorts the cell. They have perfectly regular outlines, and do not show reticulated cytoplasm and nucleoplasm. This also applies to malignant cells, and hence they are not seen to be irregular as described in the text-books. Neither does one see the irregular mitotic figures described in the text-books. Malignant cells have a very characteristic and individual appearance in fresh sections. Fixed and embedded sections have their place in learning the characteristic normal histological arrangement of tissues.

Question VIII.—Can permanent sections be made from fresh frozen sections, and how much time does this require?

Answer.—There are three ways in which the tissue can be fixed for permanent sections, depending upon the speed required. The fresh tissue can be sectioned and floated in 4 per cent formalin for one hour, or a small block of tissue can be put in 10 per cent formalin and brought just to the boiling point when it is ready for sectioning, or the block may be put in 10 per cent formalin and left for twenty-four hours when it is likewise ready for sectioning. Sections from fixed tissue are cut 5 microns thick and floated in distilled water. This tissue is then put on a slide and flooded with 95 per cent alcohol for a few seconds, then fixed on the slide with thin celloidin. It is then run through the stains, alcohols, carbo-xylol and xylol and the cover glass fixed on with balsam. This requires from fifteen to twenty minutes and many slides can be carried through at one time. These slides keep well for years, at least as long as the paraffin slides. Dr. A. H. Schade, in discussing Dr. Turley's paper[4], states that he has a frozen section slide in perfect condition, which was made thirty years ago.

Question IX.—What is the advantage of the fresh or fixed frozen tissue examination?

Answer.—By the above fresh or fixed frozen tissue method the gross and microscopic work is finished the day or the next day after the operation, and the surgeon has a complete report while the case is still under his care, not days, weeks or months later. The surgeon should have his microscopic diagnosis at a time when it will be of the greatest assistance in the treatment of the patient. To explore, remove some tissue, sew up the patient and send him back to his room to await a delayed diagnosis is quite inexcusable at this time. In malignant diseases, there is real danger of hastened dissemination of a tumor from which a specimen has been removed unless operation immediately follows the biopsy. The routine

fresh frozen section enables the surgeon to complete all operations at the first session. Since we are educating the public concerning cancer, the advice of the surgeon is sought earlier, small lesions are presented, borderline chronic irritative processes which are just becoming malignant. An accurate diagnosis by gross appearance cannot always be made, a biopsy is necessary and time is valuable.

Question X.—How does the surgical pathologist know when he takes a block of tissue for rapid sectioning, that it is from the malignant part, if there is malignancy, or from the part that will give the most information?

Answer.—His ability to do this is, of course, directly in proportion to his ability as a tissue pathologist. He is trained to pick out grossly the suspicious parts with a great degree of accuracy. If he could not accomplish this with the fresh specimen, how could he hope to accomplish it with the fixed specimen for paraffin or other kinds of work? The surgical pathologist becomes the better able to pick out suspicious areas the more often his judgment is checked by subsequent microscopic study, so that the more sections he makes the more able he becomes to choose his blocks. In making rapid frozen sections more than one block of tissue is cut and studied; often four or five blocks are cut from different areas of one specimen before an opinion is given. Often the selection of the pathological tissue is left to the surgeon. He performs a biopsy and sends the tissue to the laboratory. Then the pathologist is not under the necessity of exercising his judgment for gross diagnosis, but makes only the section and the microscopic diagnosis. In this case the pathologist's positive diagnosis is final, but the value of his negative report must be judged in terms of the surgeon's own accuracy in selecting the sample of tissue on which the pathologist's report has been made.

Question XI.—How much detail should be used in writing the pathological report?

Answer.—I have adopted the Mayo Clinic method of making reports, cultivating simplicity, brevity and accuracy, avoiding useless descriptive and confusing terms. I often hear it said that pathological reports should be written out in great detail, that a complete histological and pathological word picture should be presented to the surgeon, but for routine and surgical pathological reports this seems quite antiquated. The first aim of the present day pathologist should be to simplify as much as possible; to bring order out of existing chaos.

It is deplorable that we have so many terms for one condition, and feel that we must annex to these so many qualifying terms. For example, if a gland removed for examination is found to be inflammatory, that is all that needs be said. Of what value is it to the surgeon to know that the blood vessels are dilated or that the germinal centers are enlarged? The word "inflammatory" determines the surgeon's procedure. Of course, if the pathologist, during examination finds an unusual, rare or new condition, it is his duty to report it in detail, but I am discussing routine work.

Recently, a surgeon was given a report—"Fibro-adeno-carcinoma of the breast". He asked what type of carcinoma this was, and if it should be considered as malignant as an adeno-carcinoma or a medullary carcinoma. He also asked what prognosis he could give the patient. If he had received the report "Carcinoma, Grade 1," he would have known all there was to be known pathologically and clinically concerning the condition; he would have known that the prognosis was very good with the proper treatment.

Most surgeons are familiar with Broders'[5] grading of tumors. To quote from this recent paper, "The time is not far distant when not only physicians, but also the patients and their relatives, as well as life insurance companies will be interested in the grade of malignancy of cancer. If a surgeon knows the grade of malignancy of a cancer in addition to its size and situation, he is certainly in a better position to render more efficient treatment and a more accurate prognosis than one without such knowledge."

It is a waste of time to report "adeno-carcinoma," "scirrhous carcinoma", or "carcinoma simplex" of the breast, because, on sectioning the whole growth, one can usually find all represented. They are all carcinoma. The same is true in the case of fibro-adenoma. What difference can it possibly make to the surgeon whether it is "peri-canalicular", or if it is an "intra-canalicular fibro-adenoma", although I have known surgeons to insist on this point being made clear. Both types can usually be found in the same adenoma.

It is well known that there is no satisfactory classification of tumors so far devised, but to my mind, MacCarty's[6-7] is the most

simple, practical and free from flaws. The surgeon waiting in the operating room is interested primarily in one diagnosis,—"Is it malignant or not?", or, more briefly, "What is it?" If the report is "Malignant, Grade 1, 2, 3, or 4," then the surgeon's operative procedure will be of a certain character. If it is non-malignant tuberculous, syphilitic, inflammatory, etc., then the surgeon will proceed in another manner. There is no time for lengthy reports. Every minute counts when the patient is under an anesthetic.

Conclusions

1. It is the function of the surgical pathologist to render immediate service to the surgeon, so that he may proceed with the fullest knowledge concerning the condition.

2. It has been shown that in a high per cent of cases, surgeons cannot safely proceed on their own gross diagnosis.

3. Fresh and fixed frozen sections are easily and quickly made, and are as satisfactory as sections made by any other method.

4. It is of importance that all specimens removed at operations should be subjected to a careful routine microscopic examination. This should be done at the time of operation, and can be accomplished quickly and efficiently only by the frozen section method. In this way, unsuspected malignant conditions are often picked up, with consequent difference in the prognosis and treatment.

5. The surgical profession, as a whole, should be familiar with Broders' grading of tumors, so that they may be able to interpret their own pathological reports.

6. Pathological reports should be made with the greatest simplicity, accuracy and brevity possible. The science of pathology should be simplified, cleared of innumerable synonyms, meaningless adjectives, and brought out of its present chaos.

References.

1. MacCarty, W. C.: The Early Diagnosis of Cancer. *Arch. of Clin. Cancer Research*, Vol. 1, No. 1, January, 1925.
2. Wilson, Louis B.: A Method for the Rapid Preparation of Fresh Tissues for the Microscope. *Jour. A. M. A.*, 1905.
3. Wilson, Louis B.: Staining Sections of Living Tissue Unfixed. *Jour. Lab. and Clin. Med.*, 1915, Vol. 1, pp. 40-45.
4. Turley, L. A.: The Value and Character of Reports and Records of Tissue Examinations, *Jour. of Lab. and Clin. Med.*, Vol. XI, June, 1926, No. 9, page 827.
5. Broders, A. C.: Carcinoma—Grading and Practical Application. *Arch. of Path. and Lab. Med.*, Vol. 2, No. 3, Sept., 1926, page 376.
6. MacCarty, W. C.: A New Clinical Classification of Neoplasms; Its Terminology and Clinical Significance. *Amer. Jour. of Medical Sciences*, May, 1919, No. 5, Vol. CLVII, page 657.
7. MacCarty, W. C.: A New Clinical Classification of Neoplasms. *Jour. of Tenn. State Medical Association.*

ACUTE MASTOIDITIS.*

By SAMUEL M. COTTRELL, M. D., Richmond, Va.

In studying the subject which I shall endeavor to discuss this evening, one cannot help but be impressed with two phases of the disease. I refer, in the first instance, to the causative factor; and, secondly, to the very grave complications with which we are sometimes confronted.

It is common knowledge that practically all acute mastoids have their origin in acute middle ears. Going one step farther, we all know that acute middle ears get their start in life from the thing that everybody knows all about (and seldom ever does anything for), namely, the common cold, or, in some instances, just the plain old runny nose.

Consider briefly the anatomy. First, we have the wide-open naso-pharynx with its acutely inflamed mucosa. Opening into this and at a point particularly prone to trauma and infection, we find the pharyngeal orifice of the Eustachian tube; at the other end of this little canal, the length of which varies from ¾ of an inch to 1¾ inches, depending on the age and type of skull, we find the tympanic cavity or middle ear. Just posterior and slightly above the middle ear spaces and in direct relation to it, we find the mastoid antrum.

The mastoid antrum and middle ear could easily be looked upon as one cavity, inasmuch as they communicate directly through a sizable opening—the *aditus ad antrum*. Almost completely surrounding the antrum and in very close relation to the tympanic cavity, we find the mastoid cells. So long as these cells remain free from infection, the condition is not regarded as a serious one, but requires careful watching. Once these cells are invaded, we are brought face to face with serious possibilities and surgical measures must often be resorted to.

Going a little farther into the anatomy of this region, there are several structures which

*Read before the East End Medical Society, Richmond, Va.

should be given due consideration, and a minute knowledge of their anatomy should be had by the aural surgeon. First, we have within the cranial cavity, passing downward over the inner surface of the mastoid, the lateral or sigmoid sinus; second, the bony fallopian canal, which courses the inner tympanic wall, thence downward just beneath the aditus along the anterior surface of the mastoid and out through the stylo-mastoid foramen. This canal gives passage to the seventh or facial nerve. Third, forming the roof of the tympanum and mastoid antrum, we have an exceedingly thin plate of bone which also forms the floor of the middle fossae of the skull, a very dangerous relation. Fourth, internal to the middle ear and situated in the very dense petrous bone, we find the labyrinth or organ of hearing.

In view of the above relations one can readily see what havoc might be wrought by the common cold which invades the middle ear and mastoid cells if complications should develop. That is, we may be on the lookout for thrombosis of the lateral sinus, seventh nerve paralysis, meningitis, or brain abscess and acute labyrinthitis which often invades the intra-cranial structures.

With the exception of seventh nerve paralysis, the mortality rate in any of the other conditions is exceedingly high, and should serve as a reminder to both layman and physician that the acute coryza is deserving of more consideration.

A word as to pathology. There are three stages. In the first stage of acute mastoiditis we may find only a marked congestion of the membranes lining the cell walls. In the second, the individual cells are filled with pus but there is no breaking down of the intra-cellular spaces. In the third, there is marked bone softening and total or partial destruction of the net work of the intra-cellular spaces. It is in this stage (particularly in children) that we find perforations through the mastoid cortex and the formation of subperiosteal abscess with its characteristic deformity, in which the periosteum is lifted, causing the ear to set off from the head and have the appearance of being pushed forward or downward depending on the location of the perforation. In these cases the post-auricular fold is obliterated. It occasionally happens that the inner surface of the mastoid tip perforates and pus burrows down the neck under the sterno-mastoid muscles. The swelling usually has the shape of a banana with its upper extremity beginning about the mastoid tip. This condition is known as Bezold's abscess and necessitates drainage of the neck as well as the mastoid.

Symptoms

The symptoms of acute mastoiditis are almost always engrafted upon those of acute otitis media. In this connection, Kerrison tells us that mastoiditis without some previous inflammatory process in the middle ear is so extremely rare that it is looked upon as a curiosity rather than a clinical entity.

Pain.—There is usually one-sided headache with shooting pain which radiates from the mastoid region. This pain is often described as being deep-seated and of a boring character. The patient has an anxious facial expression and is inclined to be restless, nervous and unable to sleep.

Temperature as a rule does not run high, usually hanging between a hundred and a hundred and two, or elevation of temperature may be practically absent.

There is usually an increased cell count.

Quantitative change in the middle ear *discharge*, that is, if a running ear after two or three weeks of profuse drainage shows no signs of decrease in the amount of discharge, it is strong evidence that the mastoid is involved. A very dangerous condition arises when we have a sudden cessation of the ear discharge accompanied by a flare-up of mastoid symptoms, such as pain, tenderness, etc. A situation of this kind calls for immediate surgical intervention. Sagging of the posterior-superior canal wall is of value, but in the absence of other symptoms is unreliable. Associated with this, there is usually bulging of the posterior-superior quadrant of the tympanic membrane.

Mastoid tenderness is the most reliable of all. There are usually three points: First, immediately over the mastoid antrum, or a point just posterior to the canal; next, the mastoid tip, usually the most tender point; third, along the posterior mastoid border at the point of exit of the mastoid emissary vein.

Post-auricular edema is a valuable sign. The formation of sub-periosteal abscess following middle ear disease is looked upon as proof-positive that the mastoid is involved.

Mastoid tenderness may be confused with furunculosis of the canal, but, by bearing in mind a few facts concerning the furuncle, they are easily differentiated. Any movement of the auricle causes sharp pain in furunculosis; it causes no pain in mastoiditis. Pressure in front of the ear causes pain in furunculosis, but causes little or none in mastoiditis. Deep pressure over the mastoid, provided you do not touch the auricle or canal wall, causes no pain in furunculosis but causes excruciating pain in mastoiditis. Lastly, the canal is swollen in furunculosis but rarely so in mastoiditis.

In very young children and infants mastoiditis is rare, due to the fact that the mastoid cells are not developed in early life. The antrum, however, is present and it sometimes happens that there is a necrosis of the antral wall followed by post-auricular swelling and sub-periosteal abscess. When this happens, the same treatment as that of a suppurating mastoid is indicated.

Prognosis

If the patient is seen before complications have developed, and proper treatment promptly instituted, the prognosis is good.

Treatment

Much can be done in the way of prophylaxis. Rest in bed with early incision of the drum is most essential. Proper attention to the nasopharynx in the way of astringent sprays and local applications of silver salts should be used. The alimentary canal should be emptied and only light easily digested foods taken.

Following myringotomy, hot bichloride irrigations should be started and used from every two to four hours, depending on the amount of discharge. Ice cap to the mastoid should be used in the early stages, but is contra-indicated after pus formation has taken place, inasmuch as it favors bony necrosis and only harm can result. Too much palliative treatment in mastoiditis is an exceedingly dangerous thing, and cannot be too strongly condemned.

According to Kerrison, the indications for opening the mastoid are as follows:

1. The development during acute mastoid disease of auricular displacement as a result of post-auricular edema or sub-periosteal abscess,—furunculosis being eliminated as the causative factor.

2. The development during acute purulent otitis media of labyrinthine irritation which manifests itself by vertigo, nystagmus, etc.

3. Marked tenderness on pressure extending well beyond the limits of the antrum and showing no improvement after incision of the drum.

4. Marked variation in the middle ear discharge, its maximum flow being too great to be accounted for by the tympanic lesion, and its periods of diminution being accompanied by development of mastoid pain and tenderness.

5. Mastoid symptoms having been present and having disappeared, a discharge from the tympanic vault which resists all rational non-operative measures, by reason of its persistence, justifies opening the mastoid.

6. Finally, evidence of mastoid disease having been present, at any time during convalescence that symptoms develop of septic absorption, manifested by chills, sweats, fever, etc., other diseases being eliminated, immediate operation is demanded.

Case Reports

Case 1.—Child, age 3, seen April 21, 1926, in consultation with Dr. Whitmore, who had already made a diagnosis of acute mastoiditis, and had advised operation.

History as follows: Left ear discharged for three weeks following an attack of earache, but there had been considerable improvement until four days ago, although the discharge continued. At that time there was a decrease in the flow of pus, accompanied by rise of temperature, considerable pain and restlessness; since then the child has been acutely sick. The patient has a septic appearance; he is restless and fretful and resists efforts to examine him. The ear canal is smeared in pus and is inflamed from the continuous discharge. There is marked edema over the mastoid bone and the post-auricular fold is partly obliterated. He is extremely tender over the entire mastoid. We advised removal of patient to hospital, which was done.

On admission to hospital, rectal temperature 102.8; pulse 110; resp. 25; leucocytes 13,600; polys. 86 per cent; lymps. 14.

Urinalysis: sp. gr. 1,028, with trace of albumin and a few hyaline casts.

This child was operated upon the same night and a very bad mastoid found, there being extensive bony necrosis with marked destruction of the cell walls. Convalescence for the first three days rather stormy, after which things straightened out and he left the hospital within a week after operation.

Case 2.—Master A., age 12, referred by Dr. Blair February 11, 1926.

History as follows: Ten days ago this boy had a mild earache of rather short duration, which was followed shortly afterwards with a slight swelling in the region of the mastoid tip. This swelling has gradually increased in size until it is at this time the size of a turkey egg and extends well down on the side of the neck. On palpation it is tense, with little or no fluctuation, and very tender. He holds his head tilted well over to the affected side and the neck is very stiff.

The drum has a leathery apperance but there is no perforation or aural discharge. There is a question as to whether we are dealing with a perforated mastoid or cervical abscess, and X-ray of the mastoid was advised. X-ray report by Dr. Hodges as follows:

"The right mastoid is clear throughout. The left shows that there has been breaking down of the bony net work. I could make this out in spite of the fact that the swelling over the mastoid made it, of course, more difficult. I feel that this is a surgical case."

On admission to the hospital, temperature 99.6; pulse 110; resp. 25; leucocytes 12,600; polys. 82 per cent; lymphs. 17 per cent; large mononuclears 1 per cent; haemoglobin 80 per cent.

At operation, immediately the periosteum is gone through, there is a gush of pus from the wound which appears to be under pressure. The tip of the mastoid has a large perforation about the size of the end of the little finger. There is considerable bony necrosis and the abscess cavity extends well down into the neck, necessitating a lower incision with drainage tube. This boy had an uneventful recovery until the tenth day when his temperature went to 102, pulse 100; eleventh day—temp. 103.2, pulse 120, with considerable cough. The throat at this time is very red and a few Koplik's spots are seen. Twelfth day—temp. 104.2, pulse 134, resp. 35. The same afternoon we were much gratified by finding a few bumps which proved to be measles. Aside from this later ailment, he made a nice recovery.

Case 3.—Mr. C., age 23.

History as follows: Partially deaf in right ear since childhood; there has been from time to time a slight discharge, the odor of which is very offensive. Occasionally has earache on this side, with some dizziness and vertigo.

He has had numerous attacks of tonsillitis, one within the past few days. Two days ago the ear became quite painful and he has been unable to sleep or get relief by any of the usual remedies which he had used on previous occasions. There is no appetite and he feels quite sick. He is extremely tender over the antrum and tip of the right mastoid, and there is some edema.

Ear canal filled with foul smelling pus and there is almost total destruction of the tympanic membrane. Within the middle ear there is a cottony substance which is very difficult to remove. Temperature normal; leucocytes 9,600; polys. 69 per cent; urine negative.

A diagnosis was made of acute mastoiditis engrafted upon a chronic suppurating ear with cholesteatoma.

X-ray report by Dr. Flanagan as follows: "Radiographic examination of the mastoids shows the right cloudy, the cells posterior to the sinus being filled with either granulations or pus. The area between the tegmen, posterior canal wall and the sinus is dense. There is an area about 1 cm. in diameter in the region of the antrum which shows a circular area of increased illumination with a center that is opaque. The left mastoid is large and clear. The cells are of a mixed type."

The above indicates chronic right mastoiditis with findings suggestive of cholesteatoma. The Wassermann was taken and found to be negative.

This man had a modified radical operation. The mastoid cortex was found to be exceedingly hard (a condition following chronic suppuration). There was extensive cell destruction with a large cholesteatoma filling the antrum and middle ear. Convalescence uneventful. Hearing improved, and ear completely dry within six weeks.

209 *Medical Arts Building.*

PERFORATED GASTRIC AND DUODENAL ULCERS—A STUDY OF TWENTY-SEVEN CASES.*

By HARRY M. HAYTER, M. D., Roanoke, Va.

The recent return of two patients who were complaining of symptoms referable to the stomach or duodenum, and who had been operated upon previously for perforated gastric ulcers, suggested the idea that a study of our perforated gastric and duodenal ulcer cases might reveal a few points of interest and of value.

It is not my purpose to enter into an academic discussion of the symptoms, diagnosis, and surgical treatment of perforated ulcers, but merely to review briefly a series of twenty-seven cases which have been seen at the Jefferson Hospital in Roanoke Va. These patients were brought into the hospital presenting the clinical picture of the so-called acute surgical abdomen, which picture is familiar to you all.

Hospital statistics indicate that peptic ulcer occurs more frequently in the female than in the male sex. Surgical statistics, however, would indicate that the reverse of this statement is true. In this series of cases there were twenty-three men and four women.

The age of the patients varied from nineteen to seventy-one years. Of the four cases seen in women, two were between thirty-five and forty years of age, and two were between fifty and sixty. Of the twenty-three cases occurring in the male, there were eight between the ages of nineteen and thirty years, four between thirty-one and forty, seven between forty-one and sixty, four over sixty years of age.

In considering the duration of symptoms referable to the stomach or duodenum, an interesting observation was made in this series of cases. The exact duration of symptoms, as taken from case histories, must be more or less inaccurate, due to the different types of individuals and their attitude towards bodily discomfort, for that which would be considered as extremely annoying symptoms by some would be given no thought and considered of no consequence by others. In this series eight cases gave a history of having had symptoms for less than six months. The remaining nineteen had had symptoms for more than four years. This question might arise: Do those peptic ulcers which perforate, either do so in a comparatively short period of time, or become the site for the battle between the destruction and repair of tissue which is continued over a period of years with the destructive factor eventually winning the victory?

In this series perforated gastric ulcer occurred more frequently than perforated duodenal ulcer. There were twenty-one ulcers of the stomach, two of which were located on the posterior wall and nineteen on the anterior wall. Six of the ulcers were in the duodenum, one of which was on the posterior wall and five were on the anterior wall.

Of the twenty-seven cases, twenty-two were acute perforations twenty of which had a generalized peritonitis, and two having perforated the posterior wall, had given rise to abscess formation in the lesser peritoneal cavity, with rupture of the abscess into the right pleural cavity. Five of the cases were chronic perforations with the omentum or other adjacent structure adherent to the area involved by the ulcer and sealing off the point of perforation.

Trying to find an immediate cause of the perforation is unsatisfactory. It seems that in the majority the structure becomes so weakened at the site of the ulcer that it is unable to continue its normal physiological function and perforation takes place, as in only one case was there a definite history of strenuous muscular effort at the time of perforation.

In spite of the serious nature and acuteness of the condition, there is a general impression that the acute perforated ulcers respond well to proper surgical treatment. This in our experience has been true only in those patients of such an age that a reasonable power of resistance might be expected, and in those cases in which there has been prompt surgical intervention.

A study of the mortality in this series of cases emphasizes the importance of early recognition and treatment of the condition. So frequently a delay in diagnosis and difficulties of transportation, such as are experienced in outlying districts, have rendered the case one unfit for any surgical procedure by the time it reaches the hospital. Quite frequently the question arises, does shock justify delay of operation? In our opinion it does not, for by the time the patient reaches the hospital further delay only decreases the chances for recovery.

Of the twenty-seven cases, eleven died and sixteen recovered. A study of the fatal cases only emphasizes points mentioned above. Two

*Read before the Southside Virginia Medical Association, at City Point, Va., March 8, 1927.

of these eleven cases were moribund and died shortly after admission to the hospital without being operated upon. Autopsy revealed a perforated gastric ulcer in one and a perforated duodenal ulcer in the other.

Four of this group of fatal cases were admitted in a semi-comatose condition with subnormal temperature and a rapid thready pulse. Two of these four were operated upon under a local anesthetic with closure of the perforation in both cases, and doing a posterior gastro-enterostomy in one. Both cases died two days after operation. In the other two the peritoneal cavity was opened and drained as the point of perforation was not readily accessible, the perforation in one occurring high up on the cardiac end of the stomach. These two patients died within twelve hours following the operation.

Three of the fatal cases were in patients above sixty-six years of age. In each case there was a general peritonitis, one of which had been present for three days; however, none of this group had a leukocyte count above eight thousand. Two of these patients had perforated gastric ulcers. In these two patients the perforation was closed, as their condition would not warrant further surgical procedure. The third patient of this group had developed a gastro-colic fistula which had perforated into the peritoneal cavity. In this case the peritoneal cavity was drained because of colon bacillus infection. All three died within four days after operation.

Each of the two remaining fatal cases presents an unusually interesting picture. One, a woman fifty-four years of age, with symptoms extending over a period of five years, was operated upon for a duodenal ulcer. The ulcer was found and a posterior gastro-enterostomy performed. She had an uneventful post-operative course for twelve days, following which she developed acute abdominal symptoms. An exploratory laparotomy revealed a chronic perforation of the duodenal ulcer with obstruction of the gastro-enterostomy. The obstruction was released; however, the patient died two months later with symptoms of intestinal obstruction.

The other case was that of a man fifty-five years old. He had a perforated ulcer on the posterior wall of the stomach wih abscess formation in the lesser peritoneal cavity. The abscess had ruptured into the right pleural cavity. This patient had a rib resection and drainage of the pleural cavity and drainage of the abdominal abscess. He did well immediately after operation; later, however, he developed gangrene of the base of the right lung and died forty-seven days after operation.

Of the sixteen cases who recovered, there were six in whom the perforation had been present for less than eight hours, six in whom it had been present between twelve and twenty-four hours, and four in whom it had been present longer than twenty-four hours. The average leukocyte count in this group was sixteen thousand. The temperature and pulse rate were moderately increased. In only one case was the temperature as high as 101.

In six of these sixteen cases the perforation was closed and a posterior gastro-enterostomy performed, as the location of the ulcer was either on or so near to the pylorus that it might produce an obstruction at this point. All of these patients, five of whom were operated upon over three years ago, are well and free from symptoms.

In two of the cases the ulcer was far enough above the pylorus to permit excision of the ulcer and closure. These two patients have given no further history of symptoms, although seven years have elapsed since their operation.

Two cases had ulcers which had perforated the posterior wall of the stomach with abscess formation in the lesser peritoneal cavity, one of the abscesses having broken through into the right pleural cavity. These patients made an uneventful recovery following drainage of the abscess cavities.

There were six cases in which the perforation was closed and no further surgical procedure undertaken because it seemed unnecessary in three cases, and in the remaining three the patient's condition would not warrant it. The three cases in which the ulcer was far enough away from the pylorus so that suture of the perforation would not cause an obstruction have remained well and free from symptoms for over two years. The three in which the ulcer was located on or very near to the pylorus have continued to have symptoms, and two of these three patients have recently returned for a gastro-enterostomy.

While it is dangerous to draw conclusions from a short series of cases, nevertheless, judging by the results obtained in this series of cases and by the experience of others who have

discussed this subject, we feel that the method of choice in treating perforated ulcers located in the duodenum, and on or near to the pylorus, is to close the perforation and then do a posterior gastro-enterostomy if the patient's condition will permit this procedure. Frequently the question is asked if one is justified in doing a gastro-enterostomy in the presence of a peritonitis which naturally follows the perforation of an ulcer. This procedure is justifiable because of the relatively small number of pathogenic bacteria found in the stomach and duodenum, and to the fact that a considerable part of the inflammation is chemical rather than bacterial in origin. Of course, the longer the duration of the peritonitis, the greater is the chance of invasion by bacteria from the lower part of the intestinal tract.

In those cases in which the ulcer was located higher up on the stomach wall, good results have been obtained by excision of the ulcer and closure of the stomach wall.

TYPHOID THYROIDITIS—A CASE REPORT.

By
I. A. BIGGER, M. D.,
and
W. E. SCRIBNER, M. D.,
University of Virginia.

Only seventeen cases of typhoid thyroiditis are found reported in the literature; this seems to justify an individual case report.

Mrs. R. G., white, aged forty years, was admitted to the University of Virginia Hospital on October 4, 1926, complaining of swelling and soreness of the throat.

Family History.—Father, mother and one brother have thyroid enlargement. A nephew living in her house had typhoid fever at the time of her admission.

Past History.—The patient has noticed an enlargement of the thyroid gland for a number of years but without other symptoms.

Present Illness.—Six weeks before admission to the Hospital, she became ill and was diagnosed as having typhoid fever. Five days later her neck began to swell, and eating or talking was painful. With increasing swelling she became hoarse.

Physical examination showed a rather poorly developed and under-nourished white woman, 35-40 years of age, apparently quite ill. There was a red fluctuant swelling over the right lobe of the thyroid gland with induration surrounding it. The general physical examination was otherwise essentially negative. The temperature was 102.2°, pulse rate 140 per minute, respiration 28 per minute. Laboratory findings: White blood cells 11,000, red blood cells 3,700,000, hemoglobin 46 per cent (Dare). Differential count: Polymorphonuclear leucocytes 46 per cent, small lymphocytes 41 per cent, large mononuclears 5 per cent, eosinophiles 4 per cent, basophiles 2 per cent, transitionals 2 per cent. Wassermann negative. Blood pressure 100/50. Widal weakly positive for bacillus typhosus, and paratyphosus A. and B. The blood culture was negative on October 4th and again on October 18th.

A transverse incision was made over the fluctuant area and about one-half ounce of thick pus evacuated from the right lobe of the thyroid gland. Cultures from this pus showed the bacillus typhosus. Cultures from the urine, stools, and bile were negative for typhoid bacilli. The basal metabolic rate after recovery was plus 14 per cent.

ARSENICAL DERMATITIS FOLLOWING THE USE OF NEOARSPHENAMINE AND SIMILAR PRODUCTS BY DIFFERENT MANUFACTURERS.*

By EDGAR W. YOUNG, M. D. Petersburg, Va.

Case 1. Man, aged 49, four plus Wassermann and syphilitic gumma left ankle, was given six injections, at weekly intervals, of 0.6 gram neoarsphenamine and developed facial edema, facial erythema, and a generalized erythematous rash. Was given 1 gram of sodium thiosulphate in 10 c.c. of distilled water intravenously. In forty-eight hours there was marked improvement, and 0.5 gram was given daily for ten days. Patient cleared up entirely.

Case 2. Hemorrhagic scarlatinal rash. Man, aged 23, with chancre of six weeks' duration, according to his history, showed four plus Wassermann. Received four 0.6 gram arspenamine, and developed high fever, nausea, vomiting, general pains and erythema of upper chest. Was given 1 gram of sodium thiosulphate in 10 c.c. distilled water intravenously. In forty-eight hours marked improvement. Same continued daily for ten days. Then 0.5 gram every other day for ten days. Patient cleared up entirely.

Case 3. Man, 45 years old, with persistent four plus Wassermann after very extensive

*Cases reported before the Southside Virginia Medical Association, at City Point, Va., March 8, 1927.

treatment for three years with arsenic preparations and mercury intramuscularly, by mouth and by inunctions. Had not had any treatment for one year, and returned with this persistent four plus Wassermann and every manifestation of syphilis of the nervous system; was given six treatments of 0.6 gram neoarsphenamine. Came in thre days after sixth treatment with lichenoid eruption limited to forearms, hands, feet, and back of neck, with very intense itching. Was given 1 gram sodium thiosulphate in 10 c.c. distilled water for five days before any improvement; then 1 gram every other day for thirty days, and patient was apparently cured, the Wassermann proving negative.

Case 4. Negro woman, 24 years old, four plus Wassermann. Three hours after third treatment with 0.6 gram of neoarsphenamine, she developed edema of face, hands and feet, with an intense itching rash. Pains over body in general with nausea and vomiting. Was given at once 1.5 grams of sodium thiosulphate with relief of nausea, vomiting and pain, and edema disappeared entirely in three days. This patient had only six daily doses of 1 gram of sodium thiosulphate, then 0.5 gram every other day for ten days. Patient apparently cured.

All of these cases were put on milk diet and given free bowel elimination.

Sodium Thiosulphate.—Given intravenously, this preparation is absolutely non-toxic up to 2 grams. McBride and Dennie, in the experiments performed in their laboratories, found that sodium thiosulphate, re-crystallized and of high purity, is tolerated intravenously by lower animals in very high doses. White rats tolerated as much as 4 grams per kilo of body weight.

Technic of administration is the same as that of neoarsphenamine — concentrated method. The intravenous route holds the foremost place, and gives the best results; but, if introduction by vein is impossible, I. C. Sutton recommends oral or rectal administration. As a rule, these routes are poor substitutes, and he recommends intravenous route wherever possible.

Dixie Building.

"Be big enough to admit and admire the abilities of people who are better than you."—*Selected.*

ON RETIREMENT.

By I. S. STONE, M. D., Washington, D. C.
Honorary Fellow, Medical Society of Virginia.

After fifty years of medical practice, thirty-six of which were devoted to a specialty, it seemed fitting that I should retire from my hospital connections and my teaching position in order to care for my health and to seek a measure of rest and relief from responsibility. Since I have had a few years of experience in this carefree (?) life, some of my friends have asked me how I spend my time. What do you find to do? These questions are asked by those who are tentatively considering the plunge.

Without attempting to write an autobiography, or rather without being tempted to write an autobiography, I feel disposed to tell something of myself, not that there is much of interest to many, but largely because so little has been said by physicians upon this one subject.

One must take stock of his acquirements and an inventory of his mental equipment, if he wishes to meet new and untried conditions after he is no longer obliged to work for, and at the call of, the profession which has become a part of his life and soul. Therefore, one will almost certainly have need to take up and perhaps confine himself largely to some unfinished task, or else try to complete some interesting studies which he has never found time to complete or enjoy. In an individual or personal scrutiny of one's self, one will find what use he can make of his time. If one is fond of books, and especially of good books, while busy with his practice, he need have no fear as to how he will spend his time when he retires. *Per contra.* It would be difficult for one to while many hours away without *ennui.*

My personal method has been to take up the study of certain authors; my fad has been the reading of standard French writers of fiction, history and philosophy. Anatole France has entertained me so long that I know his vocabulary quite well, and this enables me to read him more rapidly. I am now old enough to read him *unexpurgatedly.*

But one must not fail to mention other pleasures, such as one's out of door enjoyments. For many years I have spent from one to three months of Summer in the country or in travel. Our country home (bungalow and one acre) provides much real happiness. It amuses me to be asked, "how much of a farm

have you?" As I wanted to play, I would not like to attempt farming. The bungalow is at least five hundred yards from the nearest house and there is a large tract of wild uncultivated, partly wooded land adjoining. Here we have every opportunity for nature studies, especially of bird life, for we have them in great numbers, and of many varieties. Perhaps I am more fortunate than many in my choice of location of the Summer home, for we have intimate and congenial friends not far away where there is always abundant social and literary interest.

I have never taken up golf, although there is yet a possibility of it. In its place, "cowboy pool" furnishes plenty of fun and a good deal of exercise. Another fad, if I may so call it, is my little work shop. (I have always liked to "tinker"). I have never known anything to kill time like this passion for work with tools, especially when one thinks he is really mending something, or doing something worth while.

Besides these comparatively minor occupations, one must not fail to continue his medical reading, so that he can enjoy the Medical Society and keep in touch with the work being done by his successors. He naturally wishes to watch for any innovations or additions to the stock equipment of his own generation, and I for one will take much pleasure in observing the improvements—the real advances—along all lines, including the preventive measures which should lessen the necessity for a large part of the work which it has been one's life work to perform.

In conclusion, I will refer to the retirement of the specialist, as I mentioned my having been one for many years. It may be quite possible for the family physician, especially if his practice is in the country, to ignore all reference to retirement, but to specialists in cities connected with medical schools and hospitals the subject is assuming and developing large proportions. The question requires further study which may eventually solve certain problems connected with retirement and provision for employment thereafter. Of this I hope to speak in a subsequent paper.

1618 *Rhode Island Avenue, Northwest.*

"It's good to have money and the things that money can buy; but it's good, too, to check up once in a while and make sure you haven't lost the things that money can't buy."—*Lorimer.*

A RAPID QUANTITATIVE ESTIMATION OF SUGAR IN URINES.

By THEODORE J. F. MITSCHKE, Danville, Va.
Director of City Health Department Laboratory.

Materials Needed

Bunsen burner, or alcohol flame.
Thin walled test-tube.
Wassermann pipette.
Benedict's quantitative solution—(given below).
5 c.c. pipette.

Method of Making Tests

1. Measure five (5) c.c. of the reagent into the test-tube and bring to boiling point.

2. Add 500th c.c. of the suspected urine, and bring to boil. Repeat the addition of 500th c.c. of urine and boiling after each addition until the reagent is completely reduced.

3. The sugar percentage content can be determined by the following table:

Amount of Urine Added	Percentage of Carbohydrates
0.05	20.
0.1	10.
0.15	6.66
0.2	5.
0.25	4.
0.3	3.33
0.35	2.85
0.4	2.5
0.45	2.22
0.5	2.
0.55	1.81
0.6	1.66
0.65	1.1
0.7	1.42
0.75	1.33
0.8	1.25
0.85	1.17
0.9	1.05
1.0	1.
1.05	0.95
1.1	0.9
1.15	0.86
1.2	0.83
1.25	0.8
1.3	0.76
1.35	0.74
1.4	0.71
1.45	0.69
1.5	0.66
1.55	0.64
1.6	0 62
1.65	0.6
1.7	0.58
1.75	0.57
1.8	0.55
1.85	0.54
1.9	0.52
1.95	0.51
2.	0.5
2.05	0.48
2.1	0.47
2.15	0.46
2.2	0.45

2.25	0.44
2.3	0.43
2.35	0.42
2.4	0.415
2.45	0.41
2.5	0.4
2.55	0.39
2.6	0.38
2.65	0.375
2.7	0.37
2.75	0.36
2.8	0.35
2.85	0.345
2.9	0.34
2.95	0.335
3.	0.33
3.1	0.32
3.2	0.31
3.3	0.30
3.4	0.29
3.5	0.28
3.6	0.275
3.7	0.27
3.8	0.265
3.9	0.255
4.0	0.25
4.1	0.24
4.2	0.235
4.3	0.23
4.4	0.22
4.5	0.216
4.6	0.213
4.7	0.21
4.8	0.206
4.9	0.203
5.	0.2
5.2	0.19
5.4	0.18
5.6	0.175
5.8	0.17
6.	0.16

FORMULA OF BENEDICT'S QUANTITATIVE COPPER SOLUTION.*

Copper Sulphate, anhydrous	11.5	grams
Sodium or potassium citrate	200.	grams
Sodium carbonate, anhydrous	100.	grams
Potassium thiocyanate	1.25	grams
Potassium ferrocyanide (5% solution)	5.	ml. or c.c.
Distilled water to make	1000.	ml. or c.c.

1. Dissolve the carbonate, citrate and thiocyanate in enough water to make about 800 c.c. with aid of heat.

2. Dissolve the copper sulphate in about 100 c.c. of water.

3. Pour the copper solution in the alkali very slowly.

4. Add the ferrocyanide.

5. Cool and make up to 1,000 c.c.

*5 ml. or c.c. of this reagent is reduced by 0.01 gram of glucose.

Correspondence

Report of Vaccination Against Smallpox in Madison County.

Madison, Va.,
June 7, 1927.

TO THE EDITOR:

In April of this year the physicians of Madison County, following closely the recommendations of the Virginia State Board of Health, as made in a demonstration by Dr. Grant, State Epidemiologist and assisted by Mrs. Cauthorne, our County Nurse, vaccinated against smallpox 1,189 children of school age.

The object of this report is to call attention to the procedure and to the rather unusual percentage of "takes". Twenty pupils of the total number had been vaccinated within a period of two years. In these, being already immune, there were no "takes". Of the 1,164 there were only 8 failures (5 of whom were members of the same family), giving a percentage of 99 1/3 per cent. The points that we consider most important in vaccination are:

(1) The care of the vaccine. The virus we used came directly from the refrigerator in Richmond, was transported to Madison in a short time and was immediately transferred to another refrigerator and kept there until almost the very hour at which it was used.

(2) The method of vaccination. We used the "Leake" or Multiple Pressure method. This method is described in a leaflet sent out by the State Board of Health. We find this method far better than any we had previously used; quickly done, almost entirely free of pain and the virus may be wiped off immediately with sterile cotton swabs.

(3) In the preparation of the arm we used acetone. or grain alcohol on sterile cotton swabs and allowed plenty of time for it to evaporate, so that there would be no danger of killing the virus. The children were instructed to keep their arms dry and to use no shield, or any other sort of appliance.

We were greatly pleased with the splendid co-operation on the part of the doctors, the nurse, the children and parents. We met with practically no opposition to vaccination. The results were gratifying, in that there were no particularly bad arms, the great majority of the pupils suffering practically no inconvenience.

We believe, if the recommendations of

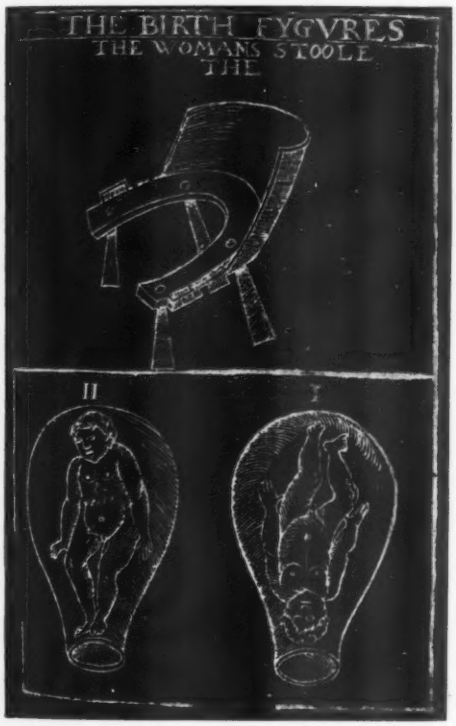
the Virginia State Board of Health were faithfully carried out, that whatever opposition there may be to vaccination would soon disappear.

J. N. Clore, M. D., *Sec'y.*
Madison County Board of Health.

Bibliotheca Obstetrica

Thomas Raynalde.

Raynalde (Thomas) [flor. 1540-51]. The byrth of mankynde, otherwise named the woman's booke. Newly set furth, corrected and augmented, whose contents ye maye rede in the table of the booke, and most playnly



in the prologue. 22 p. l, 148 l, 6 pl. 12°. *London T. Ray*, 1545. Black letter.

The same. 20 p.l., cxlix pp. 12°. *London, T. Ray*, 1552. Black letter.

The same, set feorth in English by Thomas Raynalde, phisitien, and by him corrected and augmented. 3 p. l., 204 pp. sm. 4°. *London, T. Adams*, 1613. Black letter.

For Biography, see Dict. Biog. London, 1896, xlvii, 347 (W. A. Shaw).

One of the very early treatises on obstetrics is Roslin's Rosegarten for pregnant women. (1513). It is interesting because it fixes and preserves the obstetric tradition that came down through the middle ages from the ancients, especialy Soranus. For more than 100 years it was the popular work on obstetrics. It was translated into English and published under the title of The Byrth of Mankind by *Thomas Raynalde.* In it are depicted the presentations of the infant in a flask-shaped uterus which were copied from manuscript to manuscript for centuries. These "Byrth Fygures" represent the ancient concept of the relation of the fetus to the uterus that pertained until the drawings of Leonardo da Vinci and William Hunter. The cuts shown are taken from the 1613 edition in the Army Medical Library. The obstetric stool was in general use from Pharoah's time until the 17th century. Mauriceau, the first man midwife, started the practice of confining women in bed.

Very little is known about the author or rather the translator. His second book printed in Venice, 1551, deals with the benefits of a certain oil called the Imperial oil, against innumerable diseases. Thomas Raynalde, or Rainold, is sometimes confused with a printer of the same name who was well known in London between 1541 and 1555. W. A. Shaw (Dict. Nat. Biog.) thinks that the printer and the physician were not one and the same, but were probably kinsmen.

Analyses, Selections, Etc.

Irradiation of Vesical Neoplasms by Removable Platinum Radon Seeds: Description of New Instruments Designed to Facilitate their Employment.

An improved method of treating neoplasms of the bladder by means of Removable Platinum Radon Seeds is described in this article by Joseph Muir.

Using the Removable Platinum Radon Seed it is possible to obtain scientific accuracy of the dosage delivered. Radiation is directed not only to the growth itself, but to the tissue surrounding it, in order to catch the mitotic cell. The placement of the radioactive units is made so that the "zones of potential tissue change" from each source do not overlap. The "zone of potential tissue change", or the amount of

tissue that one seed can take care of when implanted alone and also when two or three centers are used so that intervening cells are subjected to cross firing, is described. The theoretical expose has been proved by clinical results.

Using the Removable Platinum Radon Seed not only are we able to deliver accurate dosage, but because of the platinum screenage all caustic rays are eliminated and necrosis and sloughing with intense shock to the patient obviated. The fact that Platinum Radon Seeds are easily removed through the cystoscope after the required amount of radiation has been delivered makes this the method of choice since no foreign body is left in tissue after treatment.

The technic of application is fully described and illustrated. A point of great importance in using the Removable Platinum Radon Seeds is that after the first seed has been implanted through the cystoscope, its thread protruding from the portal of entry of the seed in tissue serves as a landmark and guide for the placement of successive seeds, so that the accuracy of placement of seeds through the cystoscope is greatly increased. Also, should a seed be incorrectly implanted, it may be removed and reimplanted.

In view of the highly simplified technic as described, the treatment of vesical neoplasms by implantation of Removable Platinum Radon Seeds can be accomplished with as much scientific accuracy as any other urologic procedure. (*Jour. Urology*, January, 1927, XVII, p. 53).

Woman's Auxiliary, Medical Society of Virginia

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary, Westover Avenue, Norfolk, Virginia.

Why I am a Member of the Auxiliary.

The question has been asked so often—"What is this Auxiliary? What is it for?"

Then follows the remark, "I already belong to so many societies I do not wish to join another."

The women who are already members have caught the vision and see a great future for the Auxiiliary, but to those who are not yet members, and we want you all to be with us, I would like to say, "I belong to the Auxiliary—Because—

I believe that my husband's profession is one of the finest in the world; almost the greatest work a man can do.

His profession not only uses all of its knowledge and power to cure disease, but goes farther and does what no other profession will do, that is work against its own interests in order to help humanity. By that I mean preventive medicine.

I believe that my husband is one of the finest men in his profession and I wish to back him in this work to which he gives his life.

I also belong to many other organizations, but I believe that first I should center my interests and energies on the work which is nearest my home and my heart because my position as a doctor's wife surrounds me with opportunities for investigation of the health question and an understanding of that problem which perhaps others may not have.

I have discovered that through the Auxiliary I may become the friend of any doctor's wife not only of my State but of my country and thus enrich my life.

And finally I believe in and am a member of the Woman's Auxiliary to the A. M. A. because I accept the following statement that, "each succeeding generation of the race is the beneficiary of the care bestowed by the womanhood of the generation before it."

"And I wish to carry on."

If you believe these statements to be true, will you not lend your strength to this movement by joining your State and County Auxiliaries and by attending their meetings?

MRS. F. P. GENGENBACH.
Retiring President.
Womans' Auxiliary to the American Medical Association.

Every member of the Auxiliary should read the address of President Calvin Coolidge before the annual session of the American Medical Association, in Washington, on May 17, 1927. It is published in the June number of "*Hygeia.*"

Our State President, Mrs. Southgate Leigh,

of Norfolk, was an invited guest at the meeting of the Woman's Auxiliary to the West Virginia State Medical Association in June. She extended greetings from our State and told of the Washington meeting.

Mrs. Gengenbach's address, given above, should be an incentive to the wives and daughters of all our members to join the Virginia Auxiliary. Our 1926 report showed only 315 members.

Attend local medical meetings with your husbands, get acquainted with the wives of the other doctors, and by the time you decide to organize, constructive work will suggest itself to you.

Insist upon your husband attending the meetings and taking you with him.

The Truth About Medicine

In addition to the articles enumerated in our letter of April 20th, the following have been accepted:

Abbott Laboratories
  Neonal
Certified Laboratory Products
  Ethylene—C. L. P.
Cutter Laboratory
  Alkali Weed Pollen Extract—Cutter
  All Scale Pollen Extract—Cutter
  Box Elder Pollen Extract—Cutter
  Burning Bush Pollen Extract—Cutter
  Corn Pollen Extract—Cutter
  Foxtail Pollen Extract—Cutter
  Mountain Cedar Pollen Extract—Cutter
  Tumbleweed Pollen Extract—Cutter
  Western Water Hemp Pollen Extract—Cutter
Fairchild Bros. & Foster
  B. Acidophilus Milk—Fairchild
Horlick's Malted Milk Corporation
  Horlick's Maltose-Dextrin Milk Modifier
H. K. Mulford Co.
  Lamb's Quarters Pollen Extract (Glycero-Saline)—Mulford
  Ragweed Pollen Extract (Glycero-Saline)—Mulford
  Timothy Pollen Extract (Glycero-Saline)—Mulford
  Wormwood Pollen Extract (Glycero-Saline)—Mulford
Parke, Davis & Co.
  Alfalfa Pollen Protein Extract Diagnostic—P. D. & Co.
  Kidney Bean Protein Extract—P. D. & Co.
  Typhoid Vaccine (Prophylactic)
  Typhoid-Paratyphoid Vaccine (Prophylactic)
E. R. Squibb & Sons
  Ovarian Hormone—Squibb
Swan-Myers Co.
  Ampoules Ephedrine Hydrochloride—Swan-Myers, 0.05 Gm., 1 c.c.
  Capsules Ephedrine Hydrochloride—Swan-Myers, 0.025 Gm.
  Solution Ephedrine Hydrochloride—Swan-Myers, 3%.

NEW AND NON-OFFICIAL REMEDIES

Ephedrine Hydrochloride—Abbott.—This product (The Journal, A. M. A., March 19, 1927, p. 925), is also supplied in the form of Tablet Triturates Ephedrine Hydrochloride—Abbott, ½ grain, Capsules Ephedrine Hydrochloride—Abbott, ¾ grain and Ephedrine Hydrochloride Solution—Abbott, 3 per cent, Abbott Laboratories, North Chicago, Ill. (Jour. A. M. A., April 16, 1927, p. 1235).

Glaseptic Ampoules Mercury Salicylate—P. D. & Co., 0.065 Gm. (1 grain).—Each cc. contains mercuric salicylate (New and Non-official Remedies, 1926, p. 247) 0.065 Gm.; apothesine, 0.01 Gm.; in olive oil, 1 cc. Parke, Davis & Co., Detroit.

Glaseptic Ampoules Mercury Salicylate—P. D. & Co., 0.13 Gm. (2 grains).—Each cc. contains mercuric salicylate (New and Non-official Remedies, 1926, p. 247) 0.13 Gm.; apothesine, 0.01 Gm.; in olive oil, 1 cc. Parke, Davis & Co., Detroit.

Glaseptic Ampoules Mercury Succinimide—P. D. & Co., 0.01 Gm. (1/6 grain).—Each cc. contains mercuric succinimide.—N. N. R. (New and Non-official Remedies, 1926, p. 248), 0.01 gm., apothesine, 0.005. Gm.; in physiological solution of sodium chloride, 1 cc. Parke, Davis & Co., Detroit. (Jour. A. M. A., April 30, 1927, p. 1398).

Viking Palatable Cod Liver Oil.—Cod liver oil containing 0.2 per cent of benzaldehyde. Its fat soluble vitamin A content is such that 0.002 Gm. per day is sufficient to initiate growth in the albino rat. Sigurd E. Roll, Chicago.

Rabies Vaccine—U. S. S. P. (Semple Method).—An antirabic vaccine (New and Non-official Remedies, 1927, p. 247), prepared according to the general method of David Semple (phenol killed). Marketed in packages of fourteen syringes, each containing 3 c.c. The content of a syringe is administered daily over a period of fourteen days. United States Standard Products Co., Woodworth, Wis. (Jour. A. M. A., May 21, 1927, p. 1637).

Ampoules Ephedrine Hydrochloride—Swan-Myers, 0.05 Gm., 1 c.c.—Each ampoule contains 0.05 Gm. of Ephedrine Hydrochloride—Swan-Myers (Jour. A. M. A., April 16, 1927, p. 1235), in 1 c.c. Swan-Myers Co., Indianapolis.

Capsules Ephedrine Hydrochloride—Swan-Myers, 0.025 Gm.—Each capsule contains 0.025 Gm. of Ephedrine Hydrochloride—Swan-Myers (Jour. A. M. A., April 16, 1927, p. 1235). Swan-Myers Co., Indianapolis.

Solution Ephedrine Hydrochloride—Swan-Myers, 3%.—A 3 per cent solution of Ephedrine Hydrochloride—Swan-Myers (Jour. A. M. A., April 16, 1927, p. 1235), preserved with chlorbutanol 0.5 per cent. Swan-Myers Co., Indianapolis.

Ovarian Hormone—Squibb.—A sterile, aqueous solution representing the physiologically active principles of the whole ovary. It is standardized in terms of its effect on spayed albino rats, one rat unit being the quantity necessary to induce estrus as judged by the smear method within three days in an ovariectomized, sexually mature rat weighing approximately 140 Gm. Ovarian hormone—Squibb, is administered by hypodermic injection. For recent cases of amenorrhea, artificial or natural menopause, from 50 to 100 units, is given in a series of injections over a period of from three to five days. For long existing cases of amenorrhea, artificial or natural menopause, much larger doses may be administered. Ovarian Hormone—Squibb, is supplied in 5 c.c. vials, each cubic centimeter representing 10 units. E. R. Squibb & Sons, New York. (Jour. A. M. A., May 28, 1927, p. 1713).

PROPAGANDA FOR REFORM

Resignation of Dr. George H. Simmons.—The Council on Pharmacy and Chemistry has accepted with

regret the resignation of Dr. George H. Simmons from the chairmanship of the Council. Since 1905, Dr. Simmons has guided the activities of the Council. Before the establishment of the Council, the standard and quality of drugs were left entirely to the manufacturer, except for products in the Pharmacopeia. The rise of the proprietary medicine industry and the numerous attempts made to foist on the public and on the medical profession products without merit led to repeated calls from the House of Delegates of the American Medical Association for an official body to aid in overcoming this evil. As General Manager, in February, 1905, Dr. Simmons first presented to the Board of Trustees of the American Medical Association a plan for the organization of such a body, and in accordance with their decision, arranged for the first meeting, February 11, 1905. Under his guidance the Council has carried forward its work and today still stands as the only medium to which the physician may turn for the unbiased truth regarding proprietary medicines. In accepting his resignation, the Council extended him a vote of thanks, not only on its own behalf but also on behalf of all the medical profession of this country. (Jour. A. M. A., May 7, 1927, p. 1483).

More Misbranded Nostrums.—The following products have been the subject of prosecution by the federal authorities charged with the enforcement of the Food and Drugs Act: Ambrozoin Tablets (The American Apothecaries Co.), containing ammonium chloride, licorice extract, a calcium compound, traces of terpin hydrate and an iodide. Flam (Flam Co.), a flavored syrup containing ammonium chloride and bromide, with small amounts of sodium benzoate and glycerin. Lemke's Blood Drops and Laxative Herb Tea (Dr. H. C. Lemke Medicine Co.), the first consisting of extracts of plant drugs, including aloe, together with sugar, alcohol and water; the second consisting of a mixture of powdered senna, with small portions of althea, fennel, buckthorn, elder, coriander, sassafras, flaxseed, lavender, American saffron, licorice, bear-berry, mullen, yarrow, boneset and peppermint. Bronchini (Wm. M. Chappelear and Sons Co.), consisting of ammonium chloride, extracts of plant drugs, flavoring material, including oils of anise, sassafras, sugar, alcohol and water. Arium Tablets (The Associated Radium Chemists, Inc.), composed mainly of lithium carbonate, starch and talc, with 8.58 millimicrograms of radium to each tablet. Moorite Mineral Powder (The Moorite Products Co.), consisting of powdered clay. (Jour. A. M. A., March 5, 1927, p. 744).

Cardiazol.—From German publications it appears that Cardiazol is claimed to be "Pentamethlientetrazol" and is one of a number of products which have been recently put out that are claimed to produce the therapeutic effects of camphor. Cardiazol is a product of Knoll Aktiengesellschaft, Chemische Fabriken, Ludwigshafen a. Rh., Germany, marketed in the United States by E. Bilhuber, Inc., New York. Cardiazol has not been accepted for New and Non-official Remedies. (Jour. A. M. A., March 5, 1927, p. 747).

Nitroscleran.—Basler states that according to the manufacturer "Nitroscleran" has the following composition: Sodium chloride, 6.0; sodium nitrite, 20.0; or 40.0; sodium phosphate, 3.6; potassium phosphate, 2.0; water to make 1,000.0. The A. M. A. Chemical Laboratory reports that its tests were confirmatory of the statement of Basler that the preparation is nothing more than a solution of the well known sodium nitrite dissolved in water to which some salts have been added. (Jour. A. M. A., March 5, 1927, p. 747).

Boric Acid and a Hospital Accident.—In a hospital, through a confusion of technic among three nurses, infants in the nursery were apparently given boric acid solution instead of drinking water and six died. Such accidents will no doubt be prevented in the future by rulings relative to the manner of preparing water for drinking purposes and as to the bottling and labelling of all solutions of medical value. Compared with phenol, cresol or mercury preparations, boric acid is relatively nonpoisonous, but cases are recorded of death, even of adults when considerable quantities of saturated boric acid solutions have been introduced into the body. In reported cases, from 1 to 3 Gm. have produced serious symptoms, and from 15 to 30 Gm. have been fatal to adults. In the recent accidents, each baby must have received from 15 to 60 c.c. of a saturated solution of boric acid. (Jour. A. M. A., March 12, 1927, p. 841).

Asthmolysin.—According to the advertising, Asthmolysin is "a combination of the suprarenal and pituitary hormones in distinct proportions," which is prepared by a "special method." The use of pituitary in bronchial asthma is contraindicated. While epinephrine is used with advantage in some forms of asthma, there does not appear to be any reason why physicians should use a secret preparation containing an undetermined amount of it, when accuracy of dosage and therapeutic effectiveness may be obtained by the use of the pharmacopeial product. (Jour. A. M. A., March 12, 1927, p. 858).

Ephedrine.—The Council on Pharmacy and Chemistry reports that the A. M. A. Chemical Laboratory has found the ephedrine sulphate received from Eli Lilly & Co., to be of acceptable quality. The advertising claims for Ephedrine Sulphate—Lilly, have been revised in accordance with the recommendations of the Council, and therefore the Council accepts Ephedrine Sulphate for description in New and Non-official Remedies and lists Ephedrine Sulphate—Lilly, as a brand which complies with the New and Non-official Remedies' standards. (Jour. A. M. A., March 19, 1927, p. 924).

The Lye Bill.—Congress passed the Federal Caustic Poison Bill, March 2, and the President signed it on the following day. This requires that household packages of lye, ammonia, carbolic acid, oxalic acid, and other caustic substances named in the law be distinctly labelled "Poison," with instructions as to emergency treatment in case of accident. (Jour. A. M. A., March 19, 1927, p. 926).

Benzyl Benzoate—L. A. Van Dyk Omitted from N. N. R.—The Council on Pharmacy and Chemistry reports that L. A. Van Dyk manufactures "Benzyl Benzoate—L. A. Van Dyk," and two preparations of the drug, "Benzyl Benzoate—L. A. Van Dyk, 20 per cent," and "Benzyl Benzoate, 20 per cent, Aromatic." The Council omitted these preparations from New and Non-official Remedies, because the advertising for these products is based on the enthusiastic reports published when benzyl esters were first used experimentally in medicine and the manufacturer did not make the revisions which were required to permit their continued recognition. (Jour. A. M. A., March 19, 1927, p. 944).

Bismogenol Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Bismogenol is the nondescriptive name applied to a suspension of the well known basic bismuth salicylate in olive oil by E. Tosse & Company, Hamburg, Germany (E. Tosse & Co., Inc., New York, distributor). E. Tosse & Company are not the discovers of bismuth salicylate, nor did they discover the therapeutic properties of this drug. For this reason the Council could not recognize the name "Bis-

mogenol," and therefore found the product which is marketed under this name unacceptable for New and Non-official Remedies. (Jour. A. M. A., March 19, 1927, p. 944).

Recent Observations on Scarlet Fever.—The new method of treating scarlet fever patients by the administration of a suitable antitoxin has presented a problem in relation to the development of protection against the disease. A study in the New Haven Hospital of late immunity developed by former patients who were treated with scarlet fever antitoxin and those who did not receive antitoxin indicates that there may be some disadvantage in the therapeutic dosage with the antitoxin in respect to the establishment of a more lasting immunity. It may turn out that the combating of the actual disease decreases the security that an attack of scarlet fever almost invariably promoted in former days. Nicholls, at Yale, has demonstrated the presence of *Streptococcus scarlatinae* in a proportion of persons who exhibited features of infection with hemolytic streptococci without evidences of clinical scarlet fever, thus showing that an existing immunity to the soluble toxin of *Streptococcus scarlatinae* does not prevent the development of local pyogenic infections with this organism. Persons so infected may serve as foci for the spread of scarlet fever. Trask, of Yale, urges that a large excess of antitoxin be used for therapeutic purposes to obtain consistently satisfactory results. In late cases with faded rash, little or no benefit may be expected from antitoxin therapy. Septic complications may continue when the specific toxemia and its attendant rash have terminated, thus suggesting that *Streptococcus scarlatinae* may have two different modes of attack and thus result in different clinical pictures of the disease. (Jour. A. M. A., March 26, 1927, p. 1004).

Tuberco.—This is described by its exploiters as "the cnly guaranteed treatment for all forms of lung trouble." It is sold by the Tuberco Laboratories, Atlanta, Georgia. According to the quacks that sell Tuberco, "the chemist has long known that locked within the bosom of the pine is the cure of many diseases, among them tuberculosis." Of course, neither the chemist nor any one else has known any such thing, but one cannot expect truthfulness from those who hold human life so lightly as to gamble with it. Further, according to the thesis developed by the Tuberco concern, the scientific world made a fruitless search for its alleged illusive property, until the Tuberco Laboratories succeeded in incorporating in convenient form all the valuable resinous principles of the pine "deemed so vital in the destruction of the Tubercle Bacilli and the arrest of the disease itself." The A. M. A. Chemical Laboratory examined Tuberco and reports that the product appears to be essentially gum turpentine, coated with powdered cinnamon and placed in capsules. (Jour. A. M. A., March 26, 1927, p. 1022).

The Prevention of Measles.—The need for a specific treatment of measles is evident. However, no effective measures for use after onset of the attack have been thus far developed, although methods of measles prophylaxis have been demonstrated. The efficacy of the blood serum of convalescent measles cases in preventing the disease has been established. The convalescent serum must be administered subcutaneously or intramuscularly as soon as possible after contact, the degree of protection afforded depending on the promptness with which the serum is given. Some workers advocate the use of the blood of adults or of children who have had the disease some years previously when recent convalescents are not available. The difficulty of securing a constant supply of convalescent measles serum is the chief obstacle to its wide use. Favorable results have been reported from the use of an immune goat serum. If confirmed, this may obviate dependence on a human supply. Good results have also been reported with a serum made from blood of sheep inoculated with the Berkefeld filtrate of the nasal secretion and sputum of measles patients. Attempts at active immunization by the use of blood of measles patients at the onset of the eruption have been made. These reports are interesting, but longer observation will be required before their worth can be estimated. In the treatment of established measles, the great desideratum is an effective method of preventing the dangerous secondary infections. (Jour. A. M. A., April 2, 1927, p. 1081).

Arc and Mercury Vapor Lamps.—The carbon arc and quartz mercury arc lamps are generators of ultraviolet energy. The carbon arc lamp delivers about 5 per cent of its total spectral energy in the ultraviolet zone, and the quartz mercury arc lamp delivers about 28 per cent. An erythema dose can be readily obtained with a mercury arc but it requires a considerable exposure in the case of a carbon arc. Some believe that an erythema is necessary, whereas others believe that an erythema is unnecessary, to good clinical results. (Jour. A. M. A., April 2, 1927, p. 1102).

More Misbranded Nostrums.—The following products have been the subject of prosecution by the federal authorities charged with the enforcement of the Food and Drugs Act: Tonica Para Los Nervios (Henry S. Wampole Co.), containing calcium, sodium, potassium and strychnine glycerophosphates, a trace of lecithin, sugar, alcohol and water. Boro-Pheno-Form (Dr. Pierre Chemical Co.) suppositories containing cocoa butter, quinine sulphate, zinc sulphate, boric acid and traces of formaldehyde and carbolic acid. Whitlock's Specific (The Cherokee Remedy Co.), consisting of approximately 99 per cent of water with small amounts of alum, sodium benzoate and extract of a plant drug. Bailey's Nu-Life (The Tex Bailey Corporation), consisting essentially of a watery solution of epsom salt, iron chloride, salicylic acid, with red pepper and senna, flavored with sassafras and sweetened with saccharine. (Jour. A. M. A., April 9, 1927, p. 1197).

Rice Rupture Cure.—Wm. S. Rice, Inc., Adams, N. Y., sells what the public is led to believe is a cure for rupture. The concern sometimes advertises under its own name and address and sometimes under the name of a stool-pigeon, one Eugene M. Pullen, Manasquan, N. J. The Rice concern, in common with most mail order rupture cures, decries the use of the truss and gives the impression that what they have to sell is something entirely different. However, the device is essentially a band of webbing with a pad and understrap. Like most mail order "rupture cures", the Rice device has a "patent medicine" adjunct—"Developing Lymphol". It is claimed, either inferentially or directly, that Lymphol will repair the break in the abdominal wall and thus permanently cure the rupture. Lymphol was analyzed and found to be an alcoholic solution containing essential oils, capsicum and resin, colored red. (Jour. A. M. A., April 9, 1927, p. 1199).

The Assimilation of Iron.—Investigations have been published, which the investigators believe to indicate that vitamin E is a substance specifically related to iron assimilation in a manner comparable to the relation of vitamin D to phosphorus and calcium metabolism. On this basis the use of ferric citrate and a fat having the properties of wheat germ oil—a potent source of vitamin E—is suggested as a logical basis for the treatment of secondary anemias. Since liver is rich in iron and in vitamin E this may be an explanation for the reported value

of liver in the treatment of pernicious anemia. (Jour. A. M. A., April 23, 1927, p. 1323).

The Scarlet Fever Patents.—The Scarlet Fever Committee, established to control the use of the methods resulting from the discoveries of the Drs. Dick relating to scarlet fever, has thought it advisable to secure in Great Britain patents similar to those sought in this country for the protection of the manufacture and use of the methods and products. In view of alarm expressed in British medical publications, the Drs. Dick explain that they sought the most competent advice before embarking on the procedure. They reveal that they have not had and will not receive compensation personally from the patents; they have sought only to prevent the manufacture and sale of unworthy or inefficacious products in order that the public might be protected against commercial exploitation. (Jour. A. M. A., April 23, 1927, p. 1324).

Book Announcements

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1926. With comments that have appeared in The Journal. Cloth. Price, $1.00. Pp. 73. Chicago: American Medical Association, 1927.

Those who are interested in the work of the Council on Pharmacy and Chemistry, and this includes all who have to do with the therapeutic use of drugs, look forward each year to the volume which gives the reasons for the Council's rejection of the preparations found unacceptable for inclusion in New and Nonofficial Remedies. These reasons are given in the Annual Reprint of the Reports of Council on Pharmacy and Chemistry; in addition the book gives the reasons for the omission of certain preparations from New and Nonofficial Remedies during the year, and contains several special reports of a general nature authorized by the Council for publication.

This volume contains several special reports of current interest to physicians.

New and Nonofficial Remedies, 1927, containing description of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1927. Cloth. Price, postpaid, $1.50. Pp. 473. XLVII. Chicago. American Medical Association.

The text of New and Nonofficial Remedies is so carefully scrutinized and revised each year by the various members of the Council on Pharmacy and Chemistry that each issue is essentially a new book, a safe guide to the frontier that lies between the official drugs and the latest preparations launched by the pharmaceutical manufacturers.

The mechanism of the book is excellent: each preparation is classified, and each classification is preceded by a general and critical discussion of the group by one who is an authority on the subject; there is an exhaustive index not only to the contents of the book, but also, separately, to the literature concerning the host of preparations that the Council has found unacceptable for inclusion.

New and Nonofficial Remedies is indispensable to any physician who prescribes drugs. It contains information about medical products which cannot be found in any other publication.

The International Medical Annual. A Year Book of Treatment and Practitioner's Index. By a Large Number of Contributors. Forty-eighth Year. 1927. New York. William Wood and Company. 8 vo. of 560 pages. Illustrated. Cloth. Price, $6.00.

How to Make the Periodic Health Examination. A Manual of Procedure. By EUGENE LYMAN FISK, M. D., Medical Director, Life Extension Institute, and J. RAMSER CRAWFORD, M. D., Assistant Medical Director, Life Extension Institute. Foreword by MAJOR GENERAL MERRITTE W. Ireland, Surgeon General, U. S. Army. New York. The Macmillan Company. 1927. Octavo of 393 pages. Cloth. Price, $4.00.

The Human Body in Pictures. A Visual Text of Anatomy, Physiology and Embryology. By JACOB SARNOFF, M. D., Associate Surgeon, United Israel-Zion Hospital; Formerly Associate and Instructor of Anatomy, Long Island Medical College, Brooklyn, N. Y. With Foreword by JOHN OSBORN POLAK, M. D., Octavo of 120 pages with 190 original illustrations, mostly from dissections and animated drawings by the author. Physicians and Surgeons Book Company, Henry and Parific Streets, Brooklyn, N. Y. Octavo of 120 pages. Cloth. Price, $2.00.

Overcoming Tuberculosis. An Almanac of Recovery. By GERALD B. WEBB, M. D., Consulting Physician, Cragmor, Glockner and Sunnyrest Sanatoria, etc., President, Colorado School of Tuberculosis, Colorado Springs, Colo., and CHARLES T. RYDER, M. D.,. Third Edition Revised. Paul B. Hoeber, Inc., New York, 1927. 80 pages, with a large number of charts. Cloth. Price, $2.00.

City Health Administration. By CARL E. McCOMBS, M. D., National Institute of Public Administration and New York Bureau of Municipal Research. New York. The Macmillan Company. 1927. Octavo of 524 pages. Cloth. Price, $5.50.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Medicine and Surgery. Edited by HENRY W. CATTELL, M. D., Philadelphia, and Collaborators. VOLUME II. Thirty-Seventh Series, 1927. Philadelphia and London. J. B. Lippincott Company. 1927. Octavo of 308 pages.

Transactions of the College of Physicians of Philadelphia. Third Series. Volume the Forty-eighth. Philadelphia. Printed for the College. 1926. Octavo of 405 pages. Cloth.

An Outline History of Ophthalmology. By THOMAS HALL SHASTID, M. D., F. A. C. S., Tenth Avenue Medical Building, Duluth, Minnesota. An attempt to State the History of Ophthalmology in Forty-five Minutes. 1927. Published by the American Optical Company, Southbridge, Massachusetts. 32 pages. Cloth.

Smithsonian Institution, Bureau of American Ethnology, Bulletin 83. Burials of the Algonquian, Siouan and Caddoan Tribes West of the Mississippi. By DAVID I. BUSHNELL, Jr. Washington. Government Printing Office. 1927. 103 pages. Cloth.

Methods and Problems of Medical Education. (Seventh Series). Division of Medical Education, The Rockefeller Foundation, 61 Broadway, New York. N. Y., U. S. A. 1927. 99 pages. Paper.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va
A. L. GRAY, M. D., Richmond, Va.
ALEX. G. BROWN, Jr., M. D., Editor.

AGNES V. EDWARDS, Business Manager and Secretary-Treasurer.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

VOL. 54 JULY, 1927 No. 4

Editorial

The Clinical Course of Subacute Bacterial Endocarditis.

Months, if not one or two years, may mark the progress of the early symptoms of subacute bacterial endocarditis. The onset is invariably insidious. Symptoms appear with a feeling of lassitude, vague, variable and vagabond pains, loss of appetite. sensation of chilliness, occasional vertigo, recurrent headache, and possibly paroxysmal cough—a group of mixed symptoms often met with by the clinician during the prodromal stage of other serious maladies which later emit individualistic symptoms disclosing more accurately the definite internal disease. Mixed in, and interplaying with the above noted premonitories, are symptoms directing attention to new heart involvement. The signs of the chronic valvular defect, before observed, show some changes. It is during this period of the first stage in the symptomatology of subacute bacterial endocarditis, that physicians suspect in the patients pulmonary tuberculosis, subacute rheumatism with mild sepsis. malaria, typhoid fever or some obscure focal infection. Later, however, when these patients show persistent fever of a low grade, a definite anemia, signs of constant exhaustion, evidence of enlarged spleen and characteristic alteration in cardiac signs such as softened heart sounds, a change in the appearance of cardiac arrhythmias, associated with symptoms of petechial, tender cutaneous nodes, acute signs of the clubbing of the fingers, suspicious embolism, purpuric and renal complications, one recognizes the presence of a definite advanced clinical entity of subacute endocarditis. Following this, the fever takes on a "septic course" on the chart. The spleen becomes palpable, painful, tender and enlarged. The anemia grows more marked, partaking of the nature of a secondary type, something like the picture of pernicious anemia but not characteristic of it.

The skin symptoms in subacute bacterial endocarditis become prominent; there appear purpuric and erythematous eruptions at various places and times. There suddenly occur tender or painful nodes or spots (Osler's Nodes) (50 per cent); usually appearing in tips of fingers or toes. There are no signs of hemorrhage in these. The patient may often greet the physician with the statement that a very painful spot in finger or toe has come since his last visit. Not infrequently the pain is very acute and agonizing. Besides embolic phenomena of the skin, vascular embolism of more serious import occurs. These endocardial bergs float off in the circulation and affect with extreme suddenness and ominousness, cerebral, mesenteric, pulmonary, nasal and renal regions: also, the arteries of the extremities. Symptoms and pathologic changes of extreme gravity arise from this to further aggravate grave conditions of the patient. Heart symptoms seem to withdraw a bit from the forefront of the clinical stage, not so much for a want of significance but because of prominence of the complications. However, a change of murmurs is noticed: tachycardia is increased, with signs of general septicemia, arrhythmias appear more persistent, and heart delirium follows along with emaciation. dyspnea, anemia, embolic accidents in the skin, brain, lung, spleen, kidneys. A fatal termination may occur suddenly, or may pass, with pain and agony, through many long hours.*

Two case histories may illustrate the course of this disease.

A young man, aged 25 years, merchant, was taken with the illness now under consideration September, 1923, and died the 25th of the following April, manifesting a rather typical clinical course of the disease. Since earliest boyhood. this patient had been known as a cardiopath, although he had a fairly normal youth and young manhood. At twelve years

*Read Bierring, J. A. M. A., Vol. 87, No. 7, page 464, for good description and discussion of this disease.

he was rejected in a Y. M. C. A. examination on account of his heart. As a child he had measles and diphtheria; he had had tonsillitis. In his late teens and early twenties he was somewhat dissipated. He had syphilis when twenty, and had been given salvarsan with a resulting severe reaction and jaundice. He had gonorrhea six years before this illness. At the time of what proved to be his last illness, the Wassermann tests were negative. Temperature varied from 99.6 to 103 degrees Fahrenheit, for the entire course of his illness of nine months. There were days when the temperature would not go over 100.2 while in other days it reached 103 degrees F. Anemia was evident and grew progressively worse. Starting in September, 1923, with hemoglobin 86 per cent: R. B. Cells 4,840,000: leucocytes 16,600: in April. he showed hemoglobin of 21 per cent; R. B. Cells 496.000 and leucocytes 9,000. The spleen showed enlargement and caused definite pain. The skin displayed, in the course of the illness, characteristic phenomena of the disease, purpuric areas, petechial rashes, tender cutaneous nodes and painful "spots". Vascular embolic phenomena were observed in the last two months. also transient blindness. transient paralysis, anginal pains. sense of faintness, temporary loss of consciousness. The heart showed systolic and diastolic murmurs, signs of dilatation, and auricular fibrillation and flutter toward the end of his illness. There was no gross sign of failing compensation, such as dyspnea or dropsy, although there was moisture in posterior bases of the lungs: there was some evidence of engorgement of the liver and of passive hyperaemia of the kidneys. There had been all along signs of progressive acute nephritis.

Repeated blood cultures were negative. Tonsillectomy was done in early months of the illness without apparent harm but with no advantage to the patient.

A girl student. aged 17, was taken with the illness under consideration about last of October. 1925, and died April 24, 1926, being sick about six months. Her history disclosed the following infections, so-called, malarial fever when five. and during this sickness heart murmurs had been observed. At age of seven years, she had had an attack of rheumatism. Had had one attack of tonsillitis. From time to time had had "painful joints". With exception of sickness noted, patient had never been very sick, but had never been very well. Her mother was living and well: father died of tuberculosis.

Initial symptoms of the fatal illness began with pain in her joints. Temperature began to show febrile elevations but was often normal in the mornings. There were headaches and pain in her eyes. She had been very tired, easily fatigued by school duties. Her temperature ran a septic course until death. Anemia and pallor grew progressively more marked until the end. Purpuric and petechial phenomena appeared at intervals during the last ninety days of her illness. Very painful circumscribed points would suddenly appear at a finger tip or toe. The joints were never greatly inflamed, although she showed red spots at times in wrists and ankles. There were attacks of sudden blindness and eye ache. There was marked pain in region of the spleen and it was enlarged. The heart was enlarged, was rapid and irregular in its systoles, and a loud systolic murmur at the apex was heard in the beginning. Murmurs became more marked as the illness proceeded and the heart underwent dilatation. The closing events of the illness were characterized by painful and distressed breathing and dropsy. She died suddenly, however, apparently from a cerebral embolism.

Heart Failure

Remarks on heart failure may be prefaced by a synoptic statement of the nature of heart failure. It is only possible here, however, to give a brief notice of the nature of heart failus. That picture of cardiac distress displayed in syndromes of dyspnea, cyanosis, edema. venous stasis, enlargement of the liver and diminution of urine (with more spectacular emphasis upon sudden dyspnea, pulmonary edema, and cardiac dilatation in acute failure)—and with gradual respiratory, cardiac, hepatic, nephritic congestive states in slow cardiac failure, gives one a rather full description of heart exhaustion. These evidences of heart failure show in heart diseases of various kinds. The heart conditions which we meet in dealing with cardiopaths should be considered to be the real causes of heart failure. Passing over incidental and accidental factors. such as over-exertion and exhaustion, acute indigestion so-

called, extremes of cold and heat, emotional strains, intoxications, disorders of the glands of internal secretion, as the thyroid, diseases of the lungs, etc., we may consider myocardial disease, primary or secondary, as the direct cause of cardiac failure.

Degeneration of the myocardium may be primary in form of fatty infiltration and fatty degeneration. Fatty infiltration is met with in both men and women and accompanies obesity or corpulence. The fatty deposits follow the interventricular groove, the coronary vessels, right border of the heart and, from these main lines of deposition, fatty infiltration extends to the interior of the myocardium. This, in fat patients. involves the heart in lobulated deposits of adipose tissue. Cardiac failure may occur in such patients from structural changes of heart muscle as well as from the concomitant physical factor of obesity.

Fatty degeneration of heart muscle fibers is not a common form of muscle degeneration in which cardiac failure symptoms appear.

But it is that form of muscle degeneration which is designated as myocarditis that is most frequently the cause of heart failure. This is a degeneration of muscle fibers that robs the muscle of its physiologic functions of conductivity, contractility, rhythmicity, irritability and tonicity. Myocardial degeneration may be interstitial, vascular or parenchymatous. It may involve the heart in such general pathology that certain extra heart factors, suddenly or gradually imposed, may cause this organ suddenly or gradually to fail in its function and to emit signs of acute exhaustion. These changes occur in hearts acutely infected (endocarditis); in final stages of chronic valvular lesions, in late stages of such chronic diseases as chronic Bright's disease, arteriosclerosis. syphilis; in the thyroid heart; in chronic arrhythmias of the heart (heart block, paroxysmal tachycardia, auricular fibrillation and flutter); in angina pectoris and in coronary thrombosis.

News Notes

The University of Virginia, Department of Medicine,

Held its final exercises for 1927 in connection with those of other of the graduate schools of the University, on June 12, 13 and 14. Baccalaureate sermon on the 12th, by Dr. Henry Sloane Coffin, of New York City, formally opened the exercises. Monday, the 13th was alumni day. On this day, the Alumni Association held its regular business session, which was followed by a luncheon to the graduating class. That afternoon, President and Mrs. E. A. Alderman gave their usual reception to the graduates and alumni. The alumni ball took place that night.

On Tuesday, class day exercises were held in the morning. That afternoon a band concert on the lawn was followed by the assembly for the academic procession. Hon. Junius P. Fishburn, of Roanoke, president of the State Chamber of Commerce, was speaker at the graduating exercises. On this occasion, over three hundred degrees were awarded, forty-two being to doctors of medicine. Exercises were closed with the final ball on Tuesday evening. Following the award of diplomas, the Horsley memorial research prize in medicine was awarded to Dr. Charles Bruce Morton, II, of Brooklyn, N. Y., a graduate of the medical department in 1922, for his thesis, "Findings in Experimentally Produced Peptic Ulcer; Etiologic and Therapeutic Considerations."

Announcement was made of the gift of $156,000 by the General Education Board to the Department of Medicine for development of teaching in surgery, internal medicine, public health and hygiene. This supplements two previous gifts by the Board, making $800,000 toward a total of $1,400,000 for the construction of new buildings for the medical school.

Following is a list of graduates in the Department of Medicine with their hospital appointments, all except one member of the class having accepted an appointment:

University of Virginia Hospital, University, Va.—Drs. Eugene A. Bain, Petersburg. Va.; William C. Eikner, Aberdeen, Miss.; Frederick Henry Fechtig, Jamaica, N. Y.; Raymond A. Gandy, Stamford, Conn.; Antonio Gentile, Suffolk, Va.; Ellis C. Moore, Carthage, Miss.; and George W. Surgent, Clifton. N. J.

Cincinnati General Hospital, Cincinnati, O.—Dr. George B. Arnold, Lynchburg, Va.

Massacusetts General Hospital, Boston. Mass.—Dr. Edward F. Bland, West Point, Va.

St. Luke's Hospital. New York, N. Y.—Dr. James R. Boulware, Jr., Lakeland, Fla.

U. S. Public Health Service, Washington, D. C.—Drs. William C. Brann, Village, Va., and John Russell Gill, Jr., Monroe, Va.

Emergency Hospital, Washington, D. C.—Drs. James M. Campbell, Saltville, Va.; Claiborne Barksdale White, Sutherlin, Va., and Matthew J. W. White, Jr., Norfolk.

Roanoke Hospital, Roanoke, Va.—Drs. Virgil O. Choate, Galax, Va., and Sanders G. Davidson, Norfolk.

Harper Hospital. Detroit, Mich.—Drs. Edward B. Cox, Louisville, Ky., and John M. Nokes, Hollidaysburg, Pa.

United States Navy—Drs. David John Cracovaner, New York, N. Y., and Ernest D. Davis, Jr., Standardsville, Va.

Moses Tayloe Hospital Scranton, Pa.—Dr. Samuel M. Davenport, Kingston, Pa.

Cora Donnell Hospital, Prescott, Ark.—Dr. Albert B. Dickey, Merryville, La.

Columbia Hospital, Pittsburgh, Pa. — Dr. Israel Felman, Pittsburgh, Pa.

Johns Hopkins Hospital, Baltimore, Md.—Dr. Marshall P. Gordon, Jr., Richmond, Va.

Jefferson Hospital, Roanoke. Va.—Dr Andrew DeJarnette Hart, North Garden, Va.

Union Memorial Hospital, Baltimore, Md.—Dr. Philip J. Hirshman, Brooklyn, N. Y.

Coney Island Hospital, Brooklyn, N. Y.—Dr. Maurice R. Kleinberg, New York, N. Y.

Beth Moses Hospital, Brooklyn, N. Y.—Dr. Eugene C. Milch, New York, N. Y.

T. C. & I. Hospital, Birmingham, Ala.—Dr. Lonnie Bondurant Moseley, Jackson, Miss.

University of Minnesoto Hospital Minneapolis, Minn.—Dr. Kinloch Nelson, Richmond, Va.

Lincoln Hospital, New York, N. Y. — Dr. Leonard Orens, New York, N. Y.

Grassland's Hospital. Valhalla, N. Y. — Dr. Joseph Walker Owen, Richmond, Va.

University of Michigan Hospital, Ann Arbor, Mich.—Drs. Hugh G. Reeves, Greenville. Tenn., and Walter K. Slack, Saginaw. Mich.

Binghamton State Hospital, Binghamton, N. Y.—Drs. Walter E. Scribner, Earlysville, Va., and Manley A. Siske. Pleasant Garden, N. C.

Blue Ridge Sanatorium, Charlottesville. Va.—Dr. Otis N. Shelton, Dunkirk, N. Y.

Virginia Mason Clinic, Seattle, Wash. — Dr. Henry C. Turner, Leesburg. Va.

Kings County Hospital, New York, N. Y.—Dr. Richard Henry Walker, Jr., Hattiesburg, Miss.

Bellevue Hospital, New York, N. Y. — Dr. Katharine Fox Woodward, Boston. Mass.

Dr. Nathan H. Sachs. New York, N. Y., did not accept an appointment at this time.

Petersburg Meeting, Medical Society of Virginia.

Petersburg doctors are now at work to make our coming meeting in their city a success in every way, and are counting on a good attendance. Their committees are actively at work and the general chairman and sub-chairmen, as listed in our June issue, will be glad to answer any inquiries.

The Program Committee selected "Diseases of the Kidney" as the subject for general discussion, and sub-divided it as follows:

"Physiology of the Kidney" by Chas. C. Haskell, M. D., Richmond;

"Diagnosis (Laboratory and Clinical) of Diseases of the Kidney" by F. C. Rinker, M. D., Norfolk;

"Medical Aspect of Diseases of the Kidney" by Philip Smith, M. D., Abingdon;

"Surgical Aspect of Diseases of the Kidney" by Julian M. Robinson, M. D., Danville.

Discussion of these papers is to be opened by Dr. Joseph F. Geisinger, of Richmond.

Invited guests of the president already named are Dr. Stewart Roberts, of Atlanta, Ga., and Dr. Wilburt C. Davison, of Baltimore, recently elected dean of the medical department of Duke University at Durham, N. C.

There seems promise of a large number of papers by members and each author is expected to secure some member of the Society to open discussion on his paper. Titles for the program will be received at the Society's office beginning August 18.

We get from these meetings what we put in them, so make your plans to attend and take an active part in the proceedings.

Vacation Time is Here.

Now that vacation time is here, don't lose sight of the fact that the doctor is as human as the patients for whom he prescribes, and owes it to himself as well as his clientele to have surcease from his daily "meat and bread" work. Vacations are broadening—be they long or short. They get us out of ruts and enable us to put more zest and vim into our work after even a short respite from our duties.

If you cannot get away from work entirely, cultivate an out-of-doors hobby for the sum-

mer months and pursue it and you will be amazed how it will relieve you from the strain under which a doctor lives. Plan your vacation and forget work awhile.

Dr. J. L. Harvey Out for Legislature.

Dr. J. Lewis Harvey, of Simpsons, Floyd County, Va., class '09, Medical College of Virginia, has received the endorsements, and delegates from his section have been instructed to vote for him at the democratic district convention to be held at Roanoke, Va., August 15. He lives in the distict composed of Floyd, Franklin and Bedford Counties. Dr. Harvey announces that he is in thorough accord with the medical profession in its fight against various cults in this State and wishes to hear from his professional friends with regard to this or other subjects at any time.

The Mid-Tidewater Country Medical Society.

On June 27th, a number of doctors from Essex, Gloucester, King and Queen, King William, Mathews, Middlesex and York Counties, met at Saluda and organized the Mid-Tidewater Country Medical Society for the purpose of discussing the problems that confront the general practitioners in that section. Dr. James W. Smith, Hayes Store, was elected president; Dr. James D. Clements, Ordinary, treasurer; and Dr. Malcolm Harris, West Point, secretary. The vice-presidents and executive council were selected so as to have one vice-president from each county other than the one represented by the president, and are as follows: Dr. R. R. Hoskins, Mathews; Dr. W. P. Jones, Urbanna; Dr. R. D. Bates, Newtown; Dr. E. L. W. Ferry, Millers Tavern; Dr. L. O. Powell, Seaford; and Dr. A. Warner Lewis, Ayletts.

The Society will hold quarterly meetings at various points in its territory. The next meeting, to complete the organization, will be held at Gloucester C. H., Va., on July 27th.

The Northern Neck Medical Society

Held its regular meeting at Heathsville, Va., in May, with the president, Dr. H. J. Edmonds, of Kilmarnock, presiding, and Dr. R. E. Booker, of Lottsburg, acting as temporary secretary. There was a good attendance of members and several visiting doctors who presented papers. Dr. W. B. Richardson, who recently located in Heathsville, was elected a member. The next meeting will be held at Warsaw in October, 1927.

The Pittsylvania County and Danville Medical Society

Held its regular meeting in Chatham, on June 14th, the president, Dr. C. A. Easley, of Chatham, presiding. Dr. J. A. Hawkins, of Danville, was at the secretary's desk. Cases were reported by Drs. S. E. Hughes, Jr., and J. J. Neal, of Danville, and papers were read by invited guests, Drs. E. H. Terrell and Stuart Michaux, of Richmond. Dr. I. C. Harrison was elected to represent the Society in the House of Delegates at the Petersburg meeting of the State Society. The Society is to hold its next meeting at Danville on September 13th.

The Norfolk County Medical Society,

At its annual meeting in June, elected Dr. N. G. Wilson, of Norfolk, as president, and Dr. James H. Culpepper, Norfolk, vice-president. Dr. Lockburn B. Scott, Norfolk was re-elected secretary-treasurer.

The Nelson County Medical and Surgical Society,

At its meeting on May 31st, by unanimous vote decided to send $50.00 to the Red Cross for the relief of the Mississippi flood sufferers. A resolution was adopted making the fee for giving the toxin-antitoxin at the clinics held in Nelson County in co-operation with the State Board of Health $1.50 for each patient. It was further decided that these clinics should be held and given with the consent and co-operation of the doctors living in the community where given.

The Society will meet next on the fourth Monday in July at Lovingston. The new officers—Dr. J. F. Thaxton, Tye River, president, and Dr. W. D. Meeks, Massies Mill, secretary-treasurer—will preside at this time.

Married.

Dr. James Fred Edmonds, of Accomac, Va., and Miss Julia de Tolson Dunaway, of Richmond, June 18.

Dr. William Seth Snyder, Jr., Jefferson City, Mo., and Dr. Grace Bryan Rollins, of Richmond, June 25.

Dr. Francis J. Clements and Mrs. Mildred Bashaw Brand, both of Fork Union, Va., June 17.

Dr. J. Philip Jones, Jr., and Miss Helen Brower Hickerson, both of Richmond, June 30.

Dr. Holcombe Harris Hurt, of South Boston, Va., and Miss Martha Lee Adams, of Blackstone, Va., June 15.

Dr. Harry A. Dick, New York, N. Y.. of the class of '27, Medical College of Virginia, and Miss Lillian H. Straus, of Richmond, June 12.

Dr. William Cralle Brann, of Village, Va., a member of the class of '27, University of Virginia, Department of Medicine. and Miss Kathryn Luise Tuck, of Bluefield, W. Va., June 23.

Dr. Marion H. Seawell, Jackson, N. C., of the class of '26, Medical College of Virginia, and Miss Constance Victoria Tuttle, of Richmond. June 21.

Dr. Earl J. Haden, East Leake, Va., member of the '27 class, Medical College of Virginia, and Miss Anna Virginia Headspoth, South Boston, Va., April 21.

Does Infant-Welfare Work Preserve the Unfit?

It has often been said that the methods of preventive medicine which has so greatly decreased the deaths of infants under one year of age, only preserve babies to die in later childhood. Dr. I. S. Falk of the department of hygiene and bacteriology of the University of Chicago, after a study of the deaths of white infants and children up to the age of ten years during a quarter of a century period in Chicago, finds, on the contrary, that the death rates for the subsequent years are also lower.

Park Pavilions for Convalescents in The Netherlands.

At the pavilions for convalescents which have been established in public parks in Amsterdam and other cities of The Netherlands by a private organization, the child patients are given general instruction and vocational training. Persons recovering from non-contagious diseases or suffering from incipient tuberculosis are admitted to these pavilions on payment of a small fee and remain there during the day under the care of physicians and nurses. The usual period of treatment is six weeks. The undertaking is maintained by contributions from the Red Cross and private individuals and by municipal subsides.

The Watson Medical Library.

The Richmond Academy of Medicine announces that through the generosity of Miss A. W. Archer, Mrs. A. H. Christian and Miss Virginia R. Archer, it has become the very fortunate possessor of the medical library of the late Dr. George Watson. There are 165 books in the collection, the date of publication ranging from 1740 to 1840, the authors ranging from the well-known Sydenham, Thomas Hunter, Bell and our own Benjamin Rush, who was Surgeon-General in the Revolutionary War, to lesser celebrities, such as Robley Dunglison who was brought from Europe by Jefferson to teach at the University of Virginia.

While medical works of those days were not as profusely illustrated as at present, many contain beautiful copper-plate and steel engravings, which with the clear-cut, old-fashioned text printed on laid paper, which seems to be coming into vogue again, delight the eye and thrill one with admiration for those old fathers in medicine who with not a single accessory of the present-day physician, and through observation alone, laid well the foundations of modern practice.

The donors of the books were the daughters of Mr. and Mrs. Robert S. Archer and granddaughters of Dr. Watson. Dr. Watson was born in Louisa County on February 3, 1784. In 1803, he was a student at William and Mary College, thereafter entering the University of Pennsylvania, and later graduating in medicine in London, Edinburgh and Paris. Returning to this country, he came to Richmond where he entered upon the practice of medicine and surgery.

In May, 1815, Dr. Watson married Miss Anne Riddle, of Alexandria. In 1825, he purchased the property at the northeast corner of Sixth and Franklin streets, afterwards building the small, gray structure to the north of the residence, in which he had his offices and lectured to medical students. His practice was lucrative, but his life arduous, and after forty years of utmost activity, his health failed and he retired to his country home in Louisa where he died in 1853.

It is believed that the Watson library added to the Miller collection will, when the home of the Academy is completed, enhance the reputation of Richmond as a medical center, attracting not only the undergraduate but also the graduate student interested in research in medical progress and history.

M. W. P.

Addition to Stuart Hospital.

A splendid addition has just been made to St. Martin's Hospital, Stuart, Va. This was opened early in July. The new wing is two

stories high and of brick throughout. It gives a total of twenty-five rooms including offices, operating rooms, etc., and will accommodate twenty patients. Mrs. Eggleston, a graduate of Edmunds Hospital, Danville, Va., is head nurse.

The hospital is owned and operated by Dr. W. C. Akers, a graduate of the former University College of Medicine, Richmond, in 1912.

Promotion at University of Virginia.

Dr. William Edward Bray, of the University of Virginia, Department of Medicine, has been promoted from associate professor of clinical diagnosis to full professor of clinical pathology.

Dr. M. Pierce Rucker,

Richmond, Va., was elected first vice-president of the Alumni Association of Randolph-Macon College, at its annual meeting in Ashland, Va., in June.

Visiting Northern Medical Centers.

Dr. and Mrs. R. L. Raiford, of Franklin, and Dr. and Mrs. D. L. Harrell, of Suffolk, left early in July for a motor trip to visit some of the northern medical centers, including Johns Hopkins in Baltimore, and the Jackson Clinic in Philadelphia.

Dr. Roy L. Noblin,

Oxford. N. C., of the class of '24, Medical College of Virginia, went to New York. the middle of June, to take post-graduate work in urology at the New York Polyclinic Medical School and Hospital.

School Dental-Hygiene Work Pays.

Bridgeport, Conn., has carried on school dental-hygiene work for ten years. Recently a dental survey was made of 24,000 children from the kindergarten to the eighth grade in its public and parochial schools. Comparing the results with those of the examination of 1,000 children in another community of the same State where no school dental-hygiene work had been done, it was found that 8 per cent of the Bridgeport children and only 2 per cent of the children of the other community had no fillings and no cavities.

Findings for the 16 racial groups among the Bridgeport children showed very little difference that could be attributed to nativity, but children from sections of the city where the standard of living is high had the better teeth.

Child Welfare in Denmark.

Copenhagen has eight baby clinics supervising about 1,200 babies. An unusual feature of these clinics is that only breast-fed infants are admitted. This is done to encourage the mothers to nurse their babies. Each mother is given a quart of milk a day for her own use if she attends the clinic regularly.

Denmark has the distinction of having placed dependent children in foster homes as early as 1830, and this type of placement has become a characteristic feature of the Danish child-protection system.

Dr. J. G. Carter,

After a year spent in special work in gynecology and obstetrics in the Graduate School of Medicine at the University of Pennsylvania. Philadelphia, has returned to Richmond and resumed his practice at his former home, 115 West Twelfth Street.

Dr. E. E. Walker,

After several years at Scarbro, West Virginia, has returned to his former home at Pamplin, Va.

The West Virginia State Medical Association

Held a most excellent meeting at White Sulphur Springs. W. Va., last month, under the presidency of Dr. Chester R. Ogden, of Clarksburg. The program included a number of prominent speakers from other states. A conference of county secretaries was held during the session. It was decided to hold the 1928 meeting at Fairmont and the following officers were elected: President, Dr. C. A. Ray, Charleston; vice-presidents, Drs. D. G. Preston, Lewisburg; E. L. Armbrecht, Wheeling, and W. C. Swann, Huntington; treasurer, Dr. T. M. Barber, Charleston; executive secretary, Mr. Joe W. Savage, Charleston; editor of *West Virginia Medical Journal*, Dr. James R. Bloss, Huntington.

Dr. Herbert C. Jones

Recently returned from a visit to some of the Northern clinics and announces the opening of his office at 431 West Washington Street, Petersburg, Va., for the practice of surgery.

The American Pediatric Society,

At its recent meeting, elected Dr. John Claxton Gittings, of Philadelphia, president, and re-elected Dr. Howard C. Carpenter, also of Philadelphia, secretary. The next meeting is

to be held in Washington, D. C., in the Spring of 1928.

Dr. A. B. Schilling,

Recently with the U. S. Idle Fleet at Lee Hall, Va., is now located at The Rochambeau, Washington, D. C.

The Southside Virginia Medical Association

Met in Emporia on June 14th, with a goodly attendance, and a very interesting and helpful program was carried out. At the close of the meeting, the vistiors were tendered a dinner at the Emeporia Hunt Club by the doctors of Greenesville County. Dr. Wright Clarkson, Petersburg, is president, and Dr. R. L. Raiford, Sedley, secretary-treasurer.

The Association will be guests of the McGuire Clinic in Richmond, on the second Tuesday in September.

Former Illinois Doctors, Attention!

Doctors who lived formerly in Illinois, or who are descendants of pioneer physicians of the "Illinois country" will hear with interest that Volume One of the "History of Medical Practice in the State of Illinois" is ready for delivery.

The History has been written under the supervision of a committee appointed by the Illinois State Medical Society as a commemoration of its seventy-fifth anniversary but more especially to make a living tribute to those valiant men of the medical profession who played so able a part in the exploration, settlement and development of the Illinois country.

This History of medical practice in the State of Illinois, embodies in the course of its narration, an interesting and illustrated digest of the early efforts of white settlers in Illinois, with specific allusion to the share in these tasks, performed by medical men. Included are portraits of rare interest, reproductions of historic documents, excerpts from diaries, personal letters, human reminiscences of days fraught with peril, filled with hope, and not devoid of humor, through a period of about 250 years. Attics, family albums, safe deposit vaults, and state records have been ransacked to produce the material needed for this chronicle, which is a miniature encyclopedia of scientific advance in the Illinois country, which formerly included the territory of about six of the Central States.

The edition is limited. It will not be reprinted. A place in every physician's library is merited by this volume, both as a tribute to the men who blazed the trail for modern scientific medicine and as an ever-present reminder and authority as to the great advances being made in medicine every day. Volume One is now ready. Volume Two will follow soon. Future years will bring other volumes so that this History will be an ever virile monument to the men and incidents whom it would honor. Orders may be sent to Committee on Medical History, Illinois State Medical Society,—Medical & Dental Arts Building, 185 North Wabash Avenue, Chicago, Illinois,—Charles J. Whalen, M. D., Chairman.

Tests Show High Food Value of Pork.

Results of scientific experiments have proved that the public's appetite for pork products has a sound basis. Bacon and eggs are no accidental combination; neither is a ham sandwich. There are scientific reasons which explain also why the energetic American People consume pork so liberally. In recent years the consumption of this meat has amounted to about fifty per cent of total meat dietary in the United States, according to estimates of the Bureau of Animal Industry, United States Department of Agriculture.

Investigations conducted by Ralph Hoagland, biochemist of this Bureau, and his associates, have resulted in many striking facts concerning products derived from the lowly hog. The varying content of proteins, fats and vitamins in different cuts explains the popularity of swine products.

In summing up his experimental work and after considering the results of other investigators in the field of biochemical research and nutrition, Mr. Hoagland concludes that, from a scientific standpoint, pork is justly entitled to the high place which it has already assumed in the American diet. It is particularly valuable as a source of fat and energy; it compares favorably with other meats in digestibility; it contains a fair proportion of protein of excellent quality, and a liberal amount of Vitamin B. On account of its high energy value, pork is particularly valuable as a food for persons engaged in heavy manual labor. The leaner cuts, however, such as ham, tenderloin, and chops, may be eaten interchangeably with other meats even by persons leading sedenatry lives.

Thus it seems that the much maligned boarding housekeeper at least had good sense as to

food values when she served the proverbial "ham and eggs three times a day."

Cuba's Infant Mortality Rate and the Milk Supply.

Cuba's high infant mortality rate, attributed mainly to gastro-intestinal disorders, caused the Government of the island to call a conference of public health officials to consider measures for regulating the milk supply. As a first measure, two supervising health officers were appointed—one for urban and one for rural districts.

Veterans' Bureau Hospitals Approved.

Brig. Gen. Frank T. Hines, director of the Veterans' Bureau has just been advised that everyone of the fifty-two hospitals maintained and operated by the Bureau has been fully approved by the American College of Surgeons which is the criterion in matters of this kind in the United States.

The Veterans' Bureau hospitalization program is the largest in the world, and attainment of this high standard throughout the service is one of the outstanding features of the present administration of the Veterans' Bureau.

In announcing to the Director the full approval of these institutions, Dr. M. T. MacEachern, Director of Hospital Activities of the American College of Surgeons, took occasion to acknowledge "the whole hearted support of the Director and his staff and the personnel in the various hospitals considered", as contributory factors in attaining the 100 per cent mark.

Dr. J. B. Harvie Waring,

Blanchester, Ohio, has been invited to read a paper before the Clinical Congress of Physical Therapy in Chicago, next November.

A New American Medical Directory Published.

For more than twenty years the American Medical Association has been publishing a directory of the medical profession. Ten editions have appeared, the last one (1927) being just off the press.

The first edition (1906) contained 128,171 names of physicians in the United States, its dependencies and Canada. The new Tenth Edition includes 164,002 names.

This edition of the Directory contains 10,353 names which have not appeared before, while 6,052 names have been dropped on account of death. There were more than 60,000 changes of address in the two year period since the last Directory.

The Directory is not only a list of names and addresses of physicians, but gives proof of the right of each physician listed to practice medicine—namely, time and place of graduation and year of license. In addition, society membership, specialty and office hours are included.

The information concerning hospitals and sanitariums of the United States is another valuable and extensive feature. Descriptive data appears following the names of 7,816 hospitals and sanitariums such as type of patients handled, capacity, and name of superintendent or director.

The list of physicians in each state is preceded by a digest of the laws governing medical practice in that state; members of licensing board; state board of health; names of city, county and district health officers; officers of constituent state associations and component county and district medical societies. The book is one vast source of reliable data concerning the personnel of the medical profession and the institutions and activities closely related to it. It contains 2,575 pages and is published and sold by the American Medical Association, 535 North Dearborn Street, Chicago.

Dr. Harlow Brooks

Has been appointed professor of Internal Medicine at the New York Polyclinic Medical School and Hospital of New York City.

Health Authorities Plan to Have Perfect Oysters.

The oyster sanitation work in Virginia has recently been placed under the control of State Health Commissioner, Dr. E. G. Williams. During a recent inspection trip in the oyster section, the oystermen and others agreed to support Dr. Williams' plans to sanitate the oyster area, in which work the State will co-operate with local authorities. As typhoid fever is the one disease that gives greatest concern in connection with raw food, the plan is first to eliminate this disease from the oyster section, so that the oyster may not get the germ.

Cost of Maternity and Child-Welfare Work in Great Britain.

During the year ended March 31, 1926, the Government of Great Britain expended the equivalent of about $4,350,450 as grants in aid

for maternity and child-welfare work in England and Wales. During the two previous years almost as large amounts were spent on the work.

Sex Education—A Symposium for Educators.

The U. S. Public Health Service announces the issuance of a new publication known as "Sex Education—A Symposium for Educators," which should prove of special interest and assistance to physicians and nurses who are engaged in school hygiene or physical education. Educators generally are recognizing the importance of sex educational work, not only from the standpoint of venereal disease prevention, but also for the purpose of influencing behavior and inculcating principles of normal conduct in the growing child. This publication discuesses methods of including sex education with the existing high school curriculum.

Physicians will be particularly interested in the article, "Sex Education as a Factor in Mental Hygiene." This article points out the peculiar fitness of conducting sex educational work in the high school, due to the fact that pupils of high school age being either at puberty or in early adolescence are in an especially receptive state for such instruction. The scope of this publication is broad as its purpose is really to serve as a manual of the various phases of sex educational work in schools.

The symposium will be sent free of charge to all interested physicians or nurses. Application should be made to the United States Public Health Service, Division of Venereal Diseases, Washington, D. C.

The American Surgical Association,

At its annual meeting recently held in Richmond, elected Dr. Emmet Rixford, San Francisco, as president, and Dr. Lincoln Davis, Boston, secretary. It was decided to hold the 1928 session in Washington, D. C.

Results of European Influenza Epidemic.

A bulletin issued by the League of Nations states that although the total mortality caused by the influenza epidemic cannot as yet be given, it would appear from available statistics to have been probably not less than 100,000, possibly more. The epidemic subsided in March or April. The western part of Switzerland suffered at least twice as much as the remainder of the country, and the town of Geneva the most. In towns of over 20,000, there were more deaths among women than men, and a good percentage of deaths from the epidemic were among persons of less than thirty years of age.

Dr. and Mrs. D. W. Kelly,

Culpeper, Va., left about the middle of June for a thirty day tour of North America, which included visits to Mexico, the Pacific coast to Alaska and through the Canadian Rockies back home by the Great Lakes and Chicago, thence to Washington.

Dentists in the Ascendency.

According to the bulletin issued by he Carnegie Foundation for the Advancement of Teaching, the number of dentists in the United States has been growing more rapidly than the general population, but the distribution is very irregular. At the end of 1925, it was found that there was in the United States one dentist to 1,758 population and one physician to every 767 population. In the United States, the number of dentists has steadily been increasing on a rising plane of requirements in both the preliminary and professional phases of dental training.

We find also that women are showing an increasing tendency to engage in dental training. While the figures for 1870 show only 24 women dentists, the number estimated for 1926 is 2,100. Nearly all dental schools in North America are open to them.

Dr. Thomas W. M. Long,

Of Roanoke Rapids, N. C., was recently elected president of the First National Bank in that place.

Vaccination Against Typhoid Fever Advised for Tourists.

Our State Board of Health has just issued a bulletin advising that all people who intend to travel by automobile, stopping at wayside inns or rural hotels for food and drink, should be vaccinated against typhoid fever.

The Illinois Health Department states that there has been a widespread epidemic of typhoid fever in and around Montreal, Canada, since early March, and, as there may be many sources of infection in that city, suggests that tourists planning trips in that vicinity should be inoculated against typhoid.

It is always well to bear in mind the old adage about "an ounce of prevention."

Two Well Known Drug Firms Consolidate.

The Powers-Weightman-Rosengarten Company of Philadelphia, on July 1st consolidated with Merck and Company of New York, under the name of the latter firm. Rahway, New Jersey, will be headquarters for the combined firm. This consolidation brings together two of the best known pharmaceutical houses in this country, and we extend to them our best wishes for continued success.

Jefferson Medical College to be Enlarged.

Jefferson Medical College, Philadelphia, one of the oldest medical institutions in this country, recently put on a campaign for $1,500,000 for improving and enlarging its activities. There are 6,000 of its 14,625 graduates still rendering excellent medical service throughout the world. The first class was opened at Jefferson Medical College in October, 1825, and the college has made wonderful strides since. With the money raised in this latest campaign, a twelve-story brick building is to be erected, to match the new sixteen-story hospital opened in 1924. The first six floors will be equipped at once for medical school purposes; the other six floors will permit a broadening of the program of the college from time to time.

Summer Round-up of Children.

The return of summer is bringing again the "round-up" of children who are to enter school for the first time next fall, which has been carried on by the National Congress of Parents and Teachers. Last year 50,000 children were examined, and nearly half the defects discovered were reported to have been corrected. In 1926 twice as many States participated in the round-up as in the previous year.

Successful Child-Welfare Work in the West and in the Near East.

The making of successful motion pictures is not the only ambition of the Hollywood neighborhood. Los Angeles County, in which that interesting settlement is situated, is making a determined drive for healthier children. In 1926 the county health department conducted 55 weekly child-welfare conferences for well children from birth to 6 years of age, and over 44,000 visits were made to them during the year. These were all outside the city of Los Angeles. In one district where 65 per cent of the new-born infants were brought to the health center, the infant mortality rate for these infants was 12 per 1,000 infant cases, whereas the adjusted rate for the whole district was 77 per 1,000 live births.

Excellent results have followed similar work of the Patriotic Institute of Athens, Greece, which in 1926 maintained 10 health centers, caring for over 2,000 children. Among the infants supervised by these centers the mortality rate was about one-third as great as the infant mortality rate for the city as a whole.

Dr. I. Roy Wagner,

Recently at the U. S. Veterans' Hospital, at West Haven, Conn., has been transferred to the Edward Hines, Jr. Hospital, at Maywood, Ill.

The U. S. Civil Service Commission,

Washington, D. C., announces open competitive examinations for:

Physiotherapy aide, applications to be on file at Washington, D. C., not later than July 30 and November 12, 1927.

Assistant medical officer, associate medical officer, medical officer, and senior medical officer, applications to be rated as received at Washington, D. C., until December 30.

Dr. Richard H. Holt,

Of the class of '25, University of Virginia, Department of Medicine, after a year at Marion, Maryland, has located at Middleburg, Va., where he is associated with Drs. Spitler and Selby.

The American Board of Otolaryngology

Conducted an examination at Washington, D. C., on May 16 and 17, and at Spokane, Washington on June 4. Of the 142 men examined at Washington, D. C., 119 were passed and 23 failed to pass the examination. In Spokane, the number passed was 46, and the number failed was 6.

The next examination will be held in Detroit on September 12, 1927. The applications for examination should be sent to Dr. H. W. Loeb, Secretary, 1402 South Grand Boulevard, St. Louis, Missouri.

Dr. R. A. Vonderlehr,

Formerly of Richmond, Va., but now with the U. S. Public Health Service, will sail on July 26th for Europe where he has been detailed for a three years' service. His first station will be at Cobh, Irish Free State, where his work will be connected with national immigration and quarantine laws, particularly with the examination of aliens who intend to come to this country. Dr. and Mrs. Vonderlehr are spending the first half of July in visit-

ing relatives in Northumberland and Chesterfield Counties, Virginia.

Dr. R. M. Grimm,

Of the U. S. Public Health Service, will sail July 26th, on the "President Roosevelt" for Liverpool, England, where he is detailed for immigration and quarantine work. Dr. Grimm is a native of Winchester, Va., and an alumnus of Johns Hopkins University School of Medicine in the class of '08.

Dr. R. S. Griffith,

Of Basic City, Va., recently visited a son who lives at Arcadia, Fla., and reports a most enjoyable trip.

Dr. R. H. Fuller,

Recently of Clover, Va., has moved to South Boston, Va., and bought a home there which he has converted into a private hospital.

Institute for Doctors' Helpers.

The University of Virginia will hold its second institute for doctors' helpers in Washington Hall, from August 8th through the 12th. This institute, as well as one to be conducted for colored women at the Virginia Normal and Industrial School at Petersburg from August 1st through the 5th, is to be conducted by trained lecturers from the State Board of Health. The purpose of the courses is to teach women such elementary principles of nursing as may qualify them to act as bedside helpers when trained nurses are neither available nor absolutely necessary. The courses are designed so that they may be particularly helpful in training women to act in confinement cases.

The Medical College of Virginia,

Richmond, as a residuary legatee will receive from the Martha Allen Wise estate approximately $130,000 for the care and treatment of patients at the St. Philip Hospital, a large modern colored institution owned and operated by the college for teaching purposes.

Dr. Leland O. Mauldin,

Greenville, S. C., who underwent an operation for appendicitis on June 10th, was well enough to resume his practice early in July.

The New York Polyclinic Medical School and Hospital

Has opened its new Physical Therapy department, under the direction of Doctor Richard Kovacs, Adjunct Professor of Physical Therapy. This department will serve for post-graduate teaching of doctors and nurses, and for clinical work in connection with a large general hospital.

Dr. A. H. Deekens,

Richmond, Va., announces the removal of his offices to 2423 Park Avenue, this city, for the general practice of medicine.

Dr. H. G. Longaker,

Newport News, Va., was among those attending the Shriners' convention in Atlantic City, last month.

Doctors Among Town Officers in Loudoun County, Va.

At the recent elections in Loudoun County, Virginia, Dr. R. E. Caldwell was elected mayor of Waterford; Dr. W. D. Sydnor mayor of Hamilton; and Dr. H. A. Spitler a member of the council of Middleburg.

Dr. George G. Chiles,

Of the class of '26, Medical College of Virginia, who has just completed his internship at Stuart Circle Hospital, Richmond, Va., is visiting his parents at Strasburg, Va., for a short time before going to Durham, N. C., where he will be chief resident physician and surgeon at Watts Memorial Hospital.

Obituary

Dr. Edward Douglas Davis,

Retired physician, died at his home in Winchester, Va., June 15, rather suddenly, though his health had not been good for some time. He was born in Jefferson County, West Virginia, nearly sixty years ago. He first graduated in dentistry and later studied medicine, taking his medical degree from the University of Maryland, Baltimore, in 1894. He lived at one time at Harrisonburg, Va., and was then a member of the Medical Society of Virginia. His wife survives him.

Mrs. Amorette Barker Wilson,

Wife of Dr. Archer A. Wilson, an alumnus of the Medical College of Virginia, died at her home at Switchback, W. Va. on June 12th after an illness of two years, of brain tumor. Besides her husband, she is survived by her parents, Mr. and Mrs. James B. Barker, and four sisters, Mrs. Duncan Thomas, Misses Margaret, Jane, and Eleanor Barker, all of Richmond, Va. She was married December 29, 1923.